

TECHNICAL COMMENTS

USGS Florida Water Science Center

General

1. **The AEIS lacks a coherent organization, which makes it difficult to say with confidence what the cumulative impacts of the proposed mining are expected to be.** Chapter 3 presents some of the literature that might be used to support deductions made in Chapter 4-Environmental Consequences. In Chapter 4, however, the AEIS lacks a linear progression of supported evidence that could lead to a conclusion about the four environmental issues of concern, provides no discussions of uncertainty, and relies too frequently on unsupported statements and suppositions instead of quantitative results. Some conclusions about cumulative impacts to surface and groundwater do cite previous studies, but most rely heavily on the limited analyses performed by CH2MHill for the AEIS instead of previously published investigations. Deductions that are not referenced to published results are presented at crucial places in the scientific argument and resemble opinion statements instead of substantiated findings. Where conclusions about the evidence could be presented, the approach is restated, or else the issues being considered are restated. Background material appears repeatedly in sections that should describe results. An exception is Section 4.7 ECONOMIC RESOURCES, where results are presented in clear declarative statements and tables are used repeatedly to condense and summarize available information and compare alternative scenarios. The evidence may be disputed, but at least it is plainly presented. Economic impacts are not an Environmental Consequence, and are not parallel to **wetland/upland habitats, surface water, groundwater, and water quality**. This material should be moved out of Chapter 4 to a chapter for "Economic Consequences."

Other sections of **Chapter 4** would benefit from clear declarative sentences, supported by quantitative results from citable references, to summarize the current evidence of cumulative environmental impacts of phosphate mining, and to forecast impacts from proposed mines.

The following examples are a few of the many statements that are not based on logical arguments.

p. 4-191 Table 4-66

"Substantive increased areal coverage of wetland cover categories in the year 2009 for both the Myakka and Peace River watersheds when compared with the corresponding estimates for 1990 and 1999 are not readily explained, but it is possible that at least some of this increase may be associated with more intensive reclamation or habitat creation as mitigation for wetland losses within the subject basins."

p. 4-204

"Stream habitat loss also will be temporary and located in the same vicinity as other habitat loss. However, the post-reclamation landscape will include more miles of created natural first and second order streams than currently exist, thereby mitigating, in part, a significant historical impact identified in the PRCIS."

p. 4-205

"Based on this, the cumulative effects of the four proposed mines, the two reasonably foreseeable mines, the alternatives, and other actions on aquatic resources and upland habitat are expected to be insignificant."

2. State and Federal agencies could cost-effectively and directly improve the understanding of mining impacts to Florida waters by documenting long-term streamflow in tributary basins and headwaters regions that have been and eventually will become affected by mining activities. Long-term USGS streamflow data was relied on repeatedly in this AEIS and in the related reports cited in the AEIS. It is used extensively by the mining industry and regulatory agencies to predict and regulate the impacts of phosphate mining in the CFPD on streams, wetlands, and groundwater. All of the stream flow gages described in this AEIS are operated by USGS and are jointly funded by Southwest Florida Water Management District through the USGS Federal-State Cooperative Water Program. Yet few of these streamflow gaging sites are in optimal locations for quantifying the effects of phosphate mining on streamflow. Most reflect the effect of a number of different types of land uses on streamflow (e.g., see the effect of numerous land uses on gaged flows in Appendix E).

The scale and permanence of the land alteration resulting from phosphate mining is greater than many other activities of regulatory concern of the State for which publicly-funded streamflow monitoring is considered a priority. The AEIS results indicate that less is known about streamflow (the volume of flow) from mined areas than is required to understand the “runoff capture” from mines, wetland connectivity, or the differences in the baseflow/runoff responses of the reclaimed mine tract from those that existed prior to mining. Streamflow data are used to compute runoff coefficients, such as those that had to be inferred in this AEIS, Appendix E. Streamflow data is environmental monitoring that intersects the mission areas of all of the agencies involved and would provide the phosphate-mining industry, public, and numerous stakeholders with a crucially important line of evidence for making future decisions.

3. The impacts from the four proposed mines are described in ways that are subjectively scale dependent and therefore not comparable. The spatial frame of reference used to argue cause and effect in the AEIS is not comparable for all of the issues of concern. In many cases, the frame of reference is too large to be instructive, and diminishes the apparent impact. The cumulative impacts of the four proposed mines are largest if seen from the context of the mined properties themselves, and smallest if viewed from the frame of reference of the entire CFPD, or the combined areas (or flows) of the Peace and Myakka River basins (see table below- constructed from numbers found throughout AEIS and converted to square miles). The AEIS does not adequately and clearly state what the spatial scale for defining impacts is in the Introduction. The scale for considering impacts for each of the issues of concern should be defined and applied consistently throughout the report. For example, the AEIS EXECUTIVE SUMMARY states that the predicted cumulative impact of the four proposed mines on streamflow is a small percentage of the total inflows to Charlotte Harbor Estuary, which has a contributing area of 3000 square miles. But, is this the preferred scale at which to look for significant impacts from mining? What changes in streamflow occur in streams on the mined tracts themselves? Effects on streamflows (wetland acreage, stream lengths, habitat acreage, etc.) should be quantified and compared with expected streamflows (wetland acreage, stream lengths, habitat acreage) at a variety of relevant spatial scales.

Table 1.

Feature of interest	Area, in square miles	Annual Average Daily Streamflow, in cubic feet per second
Southern Water Use Caution Area (SWUCA)	5,100	
Peace River watershed	2,350	
Myakka River watershed	550	
Charlotte Harbor Estuary watershed	3,000	
Central Florida Phosphate District (CFPD)	2,100	
Total historically and currently mined area in CFPD	500	
Clay settling areas only	150	
Horse Creek subbasin to Peace River watershed	218	200
Proposed and Future mine tracts in Horse Creek subbasin ¹	112	
Three Proposed mine tracts in Horse Creek watershed	73	
Largest capture/runoff area removed from Horse Creek by proposed mines only (yr 2040)	32	-27

¹Historic and current mine areas not included
Future mine tract (Pioneer) is 39 sq mi.

Streams

4. **It is difficult if not impossible to forecast the cumulative effects of past and future mining on streamflow because flows from mined tracts and smaller regions of subbasins cannot be explicitly quantified with the currently available data.** The USGS streamflow gages referred to in the AEIS are far downstream of mined areas and so cannot provide optimal information on the effects of mining on streamflow. Understanding cumulative impacts of mining requires a scientific estimation of the impacts from individual mine tracts and then a quantitative summation of those data – not a qualitative description of impacts that have to become large enough to be seen at a downstream location where streamflows have been historically gaged. Currently, we cannot do this. Because the current gaging sites monitor flows from large areas (hundreds of square miles), other land uses in these comparatively large watersheds – especially irrigation return-flow from agricultural areas –confound the interpretation of mining effects on streamflow. The total drainage basins being gaged (i.e. monitored for streamflow) are much larger than the individual mined areas. Streamflows at the downstream end of these larger watersheds can be comparatively large, so even small measurement errors in the flow rates can lead to large relative uncertainties in any flows that are computed by difference, such as the runoff contribution from 20-40 square mile mining tracts (see Chapter 3 p. 3-35, lines 13-21 for related discussion in AEIS). But being a small flow relative to these larger gaged flows (or even indiscernible in contrast to large standard deviations around measured flows) is an artifact of where the current gages are located, not of the importance of impacts to mined areas themselves. In addition, the natural variability around annual mean flows is large, making it necessary to have long periods of record and large impacts to establish statistically-significant trends in flow. Long-term streamflows at the gaging stations being used show both historical upward trends (Horse Creek near Arcadia, 1970-2004) and downward trends (Peace River

at Arcadia, 1935-2004) for 10, 50, and 90th percentile flows. Increases in low flows (P90 flows) are associated with runoff of agricultural irrigation water (FDEP, 2007). Gaging flows from smaller regions of subbasins that encompass mined areas would lead to more definitive conclusions about mining effects on median daily flows, peak flows, depression storage of runoff in wetlands, and baseflow contributions to streams from the surficial aquifer.

5. The AEIS does not adequately represent the cumulative impacts of the proposed mines at the scale of the subbasins in the Peace and Myakka River watersheds, especially Horse Creek Subbasin.

According to the EXECUTIVE SUMMARY p. 26 lines 1-4, most of the proposed mining impacts described in the AEIS occur in the Horse Creek subbasin of the Peace River Watershed. Yet there are no maps showing the Horse Creek subbasin in the Executive Summary, or in Chapters 1 or 2. The subbasin first appears on a map in Chapter 3, Figure 3-14 on page count 211, when Horse Creek becomes the focus of a streamflow analysis.

We suggest that the Horse Creek subbasin also be the focus of analysis of groundwater pumping effects and wetland, stream, and habitat losses. Wetland hydrology, streamflow, and groundwater levels are all interdependent when considered at the subbasin scale (Lee and others, 2010). Thus, the alterations due to mining should focus on this scale throughout AEIS. The outline of the Horse Creek subbasin should be included in additional maps throughout the report. We could not find, for instance, a map that shows the boundaries for each of the mining categories (1. Historic; 2. Existing; 3. Proposed; and 4. Future) on a map that also shows the Horse Creek subbasin. However, it seems that these mine areas taken together will exceed 50% of the subbasin area (refer back to Table 1 in these comments). Horse Creek is one of six principle tributary subbasins for the Peace River watershed. The subbasin scale has been used to understand cumulative environmental changes to the Peace River watershed in numerous earlier studies (e.g., FDEP, 2007; Metz 2009; Lee and others 2010).

6. Capture Area Projections used to understand the cumulative streamflow reductions from four proposed mines should accumulate the captured areas on historic and existing mine tracts. This comment is related to comments 4 and 11. Estimates of captured flows on current and historically mined areas should be validated by long-term measurements of actual streamflow.

7. The AEIS does not adequately address the effects of clay settling areas (CSA) on the surface and groundwater hydrology of reclaimed mined areas. Water quality aspects are reported (e.g, p. 4-118-123) as are their importance as avian habitat. However, little is reported on hydrology. The capture area analyses (Appendix E) makes assumptions about the time frame for reconnecting CSA acreage entirely back into the watershed, but no measured results are reported on previously reclaimed CSAs. How accurate are these assumptions? No references are cited to verify the current hydrologic function of the 234 existing clay settling areas that make up 150 square miles or one-third of the CFPD. The influence of CSAs on the local hydrology or how they, collectively, contribute to the area-wide surface and groundwater hydrology of the Central Florida Phosphate District is not reported. The AEIS should include a synthesis of the existing understanding of the effect of CSAs on groundwater and streamflow contributions in the CFPD to inform decisions about proposed and future mining on cumulative impacts.

8. Annual average values of streamflow are used in the AEIS but changes in the seasonally highest and lowest (percentile) flows are needed to understand impacts from mining. Measured and predicted changes in the median, highest, and lowest percentile flow rates, and not average rates, are typically used to identify changes to streamflow, as was done in Peace River Cumulative Impact Study 2007 (FDEP 2007). The majority of the proposed mined areas (3 out of 4) are in the Peace River watershed, which is used as a municipal water supply supplement for southwestern Florida. The increased probability of reduced low flows during the dry season is important to current and future downstream water users. In the surface water resource section of the AEIS (Chap. 4), an analysis was conducted to determine annual average flow from the Horse Creek watershed during average rainfall conditions during the mining process. This analysis would benefit from including a dry season analysis to see the effects of the proposed changes when flows are lowest and most critical ecologically. Dry season forecasting would show how this reduced streamflow in the Horse Creek subbasin influences the Peace River during the dry season. To understand the impacts from mining, it would be more useful if the analysis was conducted using monthly average streamflows.

9. The Runoff Calculation Method (Appendix E) is not a scientifically rigorous approach for predicting runoff. No physical processes (wetland depression storage, infiltration, evaporation, streamflows, etc.) are represented in the analysis. The approach is more correctly considered a linear regression analysis, with coefficients adjusted by hand that correlate measured streamflow with yearly acreages of different soil types in the basin and yearly total rainfall. The method's strength is its ability to reflect different land uses over time. The method's shortcoming is that approximately 100 coefficients are applied to these different landuse/soil types (Appendix E - Tables 3 and 4) that are then used in the regression equation. These coefficients represent a large number of "tuning factors" that cannot be separately calibrated or correlated to physical processes. As a result, the solution is not unique; that is, the coefficients could assume numerous other values and still produce acceptable streamflows. For this reason, the final equation will have limited accuracy for predicting streamflow at another location. Sensitivity analyses and validation are needed. For example, how sensitive are the flows predicted using this equation to changes in any of these coefficients? How well does the equation developed for the USGS streamflow gage Horse Creek near Arcadia (Stn # 02297310) predict long-term streamflow at a nearby site - Horse Creek nr Myakka Head (02297155)?

Wetlands

10. Misleading language and descriptive statistics are used to quantify wetland impacts in the Executive Summary and elsewhere in the report. Instead of 16 to 21 percent, from 50 to 80 percent of the original wetland acreage on mined properties will be impacted.

ES.6 ENVIRONMENTAL CONSEQUENCES, p 15 lines 4-7: *"Although no mine plans have been submitted by any applicant for these alternatives, current mining approaches for planning, construction, and reclamation of mine sites can be assumed to be similar to what is proposed for percentage of impacts for the four proposed alternatives which range from 16 to 21 percent of wetland impacts".*

p15, lines 8-9: *The potential acreages of impact would be on the order of 16 to 21 percent of the indicated figures”.*

p. 16, lines 8-9: *“As for the foreseeable future alternatives, the estimated acreages of **potential impact would range between 16 and 21 percent of the indicated figures”.***

The phrases above taken from the report are misleading with respect to these two numbers. However, it would be correct to say that, based on estimates from the 4 proposed mines, “from 16 to 21 percent of the *total mine property* will eventually become impacted wetlands.” How these percentages are calculated is not shown, but they can be derived using 2 columns in Table ES-2, page 15: “Acres of Wetlands Proposed to be Affected” and “Total Area of the Tract”.

The 50 to 80 percent wetland impacts can be calculated as follows. Before mining begins, around 25 to 35 percent of the “Total Area of the Tract” is unaffected wetlands (Table ES-3: divide Total Wetland (acres) by Total Site (acres). This is consistent with Statewide estimates; freshwater wetlands constitute 26 percent of the land cover in Florida (Haag and Lee, 2011)). After mining, 16 to 21% of the land area of the tract becomes impacted wetland. Therefore, from the perspective of impacts to wetlands, 46 to 84 % of the wetlands on mine tracts are impacted - so roughly 50 to 80 percent of the wetlands on a given mine tract will be impacted by mining.

11. The AEIS does not provide adequate data from actual mitigation and reclamation efforts to demonstrate the mining industry’s current ability to meet the permitted targets for stream and wetland mitigation. These results are needed to inform conclusions about cumulative impacts from mining in the CFPD. References to previously published or completed mitigation and reclamation data are lacking and would strengthen the contentions of the Applicant and FDEP that proposed targets are achievable. The AEIS presents only the Applicant’s *targets* for wetland and stream reclamation for the 4 proposed mines, as contained in the Applicant’s Section 404 permit applications (p. 5-18 through 5.-20). *“As indicated in the tables, each Applicant proposes to reclaim more wetland area and stream length than currently exist at the mine sites”*. For scientific credibility, however, what also is needed in Chapter 5: MITIGATION is an analysis of previously proposed targets in Applicant permits that have been met in the field at other mining sites, namely, restoration of wetland area and stream length during specified time periods. Without an objective summary of field performance data to date for these reclamation targets, the estimates given in the permit applications cannot be evaluated, and so may or may not be achievable over a realistic timeline. A concerted effort has been made to mitigate losses to streams and wetlands. The degree to which these targets are met should be reported.

12. AEIS provides no field-performance data on the level of hydrologic function that can be expected of reclaimed streams and wetlands that are in the mitigation targets. A synthesis of the findings from field observations of flows and water levels, and analyses of the post-reclamation hydrology of mining tracts, are needed in the AEIS to assess the cumulative impacts from mining on the hydrologic function of streams and wetlands in the CFPD.

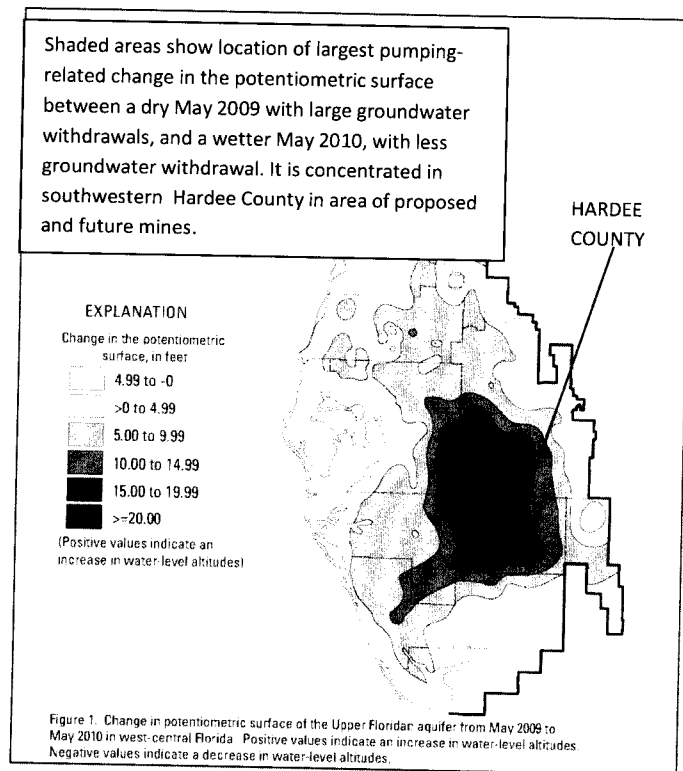
13. The AEIS does not address the cumulative impacts of the proposed mines on wetland hydrologic connectivity, or the intermittent stream flows between headwater wetlands and intermittent streams that convey flow to larger tributaries. On p. 3-108 the AEIS states, *“Phosphate mine projects within the CFPD would affect wetlands and surface water systems within the footprint of the proposed mines unless these natural systems are included in the “no mining” areas addressed during mine plan development.”* Although this is correct, it is a simplification, because in addition the wetlands and streams down gradient of the footprint of the proposed mines will also be affected, and this is never stated in the AEIS. Headwater wetlands and first-order streams connect uplands and riparian systems with river systems longitudinally, laterally, and vertically. Cumulative alteration of headwater wetlands and streams affects river function at larger scales, affecting downstream hydrology, water quality, biota, and geomorphic processes. The potential for those impacts should be documented with baseline data in order to quantify this potential loss, and also to substantiate restoration after reclamation.

14. The Conceptual Buffer analysis for wetlands uses unrealistically large buffer widths (greater than a quarter of a mile, half a mile, and a mile in width) that would be impossible to implement and are inconsistent with regulations in other jurisdictions. The proposed alternatives suggested by the conceptual buffer analysis would result in huge areas being excluded from mining and vast deposits of rock rendered unmined. The derivation of these buffer widths (1,500 ft; 3,000 ft; 6,000 ft) is **undocumented** and appears arbitrary. For example, Hillsborough County has proposed wetland buffer widths of 50-100 ft around wetlands in the county. A revised buffer analysis using a more realistic and well documented range of buffer widths would be useful, instructive, and could provide a permit modification that would provide setbacks allowing the Applicants to mine in an economically viable way while protecting many wetland functions.

Groundwater

15. The AEIS does not address the cumulative impact of mining on groundwater flow in the surficial aquifer system, particularly in historically mined and reclaimed areas. What is the impact of mining on the groundwater in the surficial aquifer? The groundwater model DWRM2 is used to report annual average drawdown in the levels of the Upper Floridan aquifer due to the 4 proposed mines. However, the AEIS provides no discussion of the surficial aquifer impacts. Several studies (Garlanger, 1982; Lewelling and Wylie, 1993; Schreuder, 2006) discuss baseflow and streamflow conditions, but these studies have conflicting results. Groundwater flow in the surficial aquifer is an important source of baseflow to streams, and high water-table elevations in the surficial aquifer system are needed to keep wetlands hydrated. Daily streamflow measurement are needed to quantify the baseflow contribution to streams on reclaimed lands. Baseflow is derived from the infiltration of rainfall to the surficial aquifer, and it can contribute the majority of streamflow in Peace River tributaries. For example, baseflow contributes about two-thirds of the flow in the Charlie Creek tributary to Peace River over the long term average (Lee and others, 2010). The condition of the surficial aquifer in hundreds of square miles of reclaimed mined areas will affect streamflows from these tracts of land for the foreseeable future.

16. The groundwater model DWRM2 is used to report annual average drawdown in the groundwater levels of the UFA due to the 4 proposed mines. For completeness, the AEIS also should report the impacts of the seasonally lowest simulated groundwater levels caused by pumping. The annual average drawdown is a hypothetical condition that averages out the seasonal extremes in pumping effects. The largest drawdowns due to pumping occur in the spring/dry-season are associated with most of the notable environmental impacts (sinkhole formation, dry wells, water losses from streams). The amount of groundwater pumped from Upper Florida aquifer for mining operations varies seasonally and annually with rainfall (see Fig. 4-31 on page 4-80). This seasonal pumping compounds the natural seasonal groundwater fluctuations during the wet and dry seasons, which is further compounded by agricultural irrigation pumping. As a result, ROMP Wells 31 and 40 show 20 to 40 ft seasonal fluctuations in UFA levels due to mining plus agricultural pumping (eg., Figs. 4-25 through 4-27). Varying levels of drawdown from current phosphate mine pumping extends across much of the CFPD (see simulated head recovery without pumping from mines, Appendix D, Figure 16). Drawdown affects areas where the UFA is both poorly confined and well-confined. Much of the effect of the proposed mining will be in western Hardee County where the potentiometric surface of the UFA in the dry season (May) already is at low levels, and will move into western De Soto County. The AEIS indicates that Agricultural pumping will be reduced by 8%, from 650 to 600 mgd. However, this reduced amount is spread over the 5,100 square mile SWUCA, and will not offset the concentrated effects of pumping for mining in western Hardee and DeSoto Counties. The AEIS should consider the superposition of these seasonal effects on the existing potentiometric surface in western Hardee County which already displays severe drawdown impacts in the dry season, particularly during drought years.



from: Ortiz, A.G (2011) Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 2010, US Geological Survey Scientific Investigations Map 3139, 1 sheet.

References

- Ardaman and Associates, Inc., 2002, Effects of phosphate mining and other lands uses on Peace River flows, prepared for the Florida Phosphate Council, 1435 East Piedmont Drive, Tallahassee, FL, 20p.
- Florida Department of Environmental Protection, 2007, Final report: Peace River cumulative impact study: Report prepared by PBS&J for the Florida Department of Environmental Protection and the Southwest Florida Water Management District, 383 p.
http://www.dep.state.fl.us/water/mines/pr_cis.hmt.
- Haag, K.H., and Lee, T.M., 2010, Hydrology and Ecology of Freshwater Wetlands in Central Florida – A primer, U.S. Geological Survey Circular 1342, 138 p.
- Lee, T.M., Sacks, L.A., and Hughes, J.D., 2010, Effects of groundwater levels and headwater wetlands on streamflow in the Charlie Creek basin, Peace River watershed, west-central Florida, U.S. Geological Survey Scientific Investigation Report 2010-5189, 77p. <http://pubs.usgs.gov/sir/2010/5189/>
- Lewelling, B.R., and Wylie, R.W., 1993, Hydrology and water quality of unmined and reclaimed basins in phosphate-mining areas, west-central Florida: U.S. Geological Survey Water-Resources Investigations Report 93-4002, 93 p.
- Metz, P.A., and Lewelling, B.R., 2009, Hydrologic conditions that influence streamflow losses in a karst region of the Upper Peace River, Polk County, Florida, U.S. Geological Survey Scientific Investigations Report 2009-5140, 83 p.
- Ortiz, A.G, 2011, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 2010, US Geological Survey Scientific Investigations Map 3139, 1 sheet. <http://pubs.usgs.gov/sim/3139/>
- Schreuder, P.J., Earls, J.K., and Dumeyer, J.D., Impact of phosphate mining on streamflow, Publication No. 03-145-220, Florida Institute for Phosphate Research (FIPR), 88 p.

DEPARTMENT OF THE ARMY PERMIT

Permittee: Mosaic Fertilizer, LLC
13830 Circa Crossing Drive
Lithia, Florida 33547

Permit No: SAJ-1997-4099-IP-MGH

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: 18 - year authorization to disturb 534.4 acres (ac) of wetlands consisting of 246.1 ac of herbaceous, 261.8 ac of forested, and 26.2 ac of open water and 0.3 ac of other waters of the United States to be mined or disturbed. In addition, 56,661 linear feet (lf) of both first and second order streams would be disturbed for the project. Approximately 11 ac of wetlands and 1,416 lf of streams would be temporarily disturbed for the proposed five (5) dragline crossings.

As mitigation for the proposed impacts,

- create 170.9 ac of herbaceous wetlands;
- create 310.3 ac of forested wetlands;
- create 61,016 lf of stream channels;
- restore 1,416 lf of stream channel following completion of use of five (5) temporary mine infrastructure corridor stream crossings;
- restore 43 ac of wetlands following completion of use of five (5) temporary mine infrastructure corridor stream crossings;
- granture of a conservation easement on 2020.8 ac in and adjacent to floodplains identified as Conservation Easement Areas A and Aa;
- granture of a conservation easement on 41.3 ac of wetland and uplands and 1,416 lf of stream channels associated with the five temporary mine infrastructure corridor stream crossings identified as Conservation Easement Area B;
- granture of a conservation easement on 521.8 ac of wetlands, uplands and riparian buffers identified as Conservation Easement Area C.

The work described above is to be completed in accordance with the approximate 2523 pages of drawings and six (6) attachments affixed at the end of this permit instrument.

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Project Location: The proposed SFM-HC is located in Hardee County, Florida east of the town of Bowling Green, south of County Line Road, and adjacent to the Applicant's existing SFM-PC mine, as well as Boyd Cowart Road and County Roads 664A and B, in Sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 34, 35, and 36, Township 33 South, Range 25 East and Sections 5, 6, 7, 8, 18, 19, and 30, Township 33 South, Range 26 East. Portions of the SFM-HC ore reserves that the Permittee proposes to extract lie entirely east of the Peace River and adjacent to its Little Charlie Creek, Parker Branch, Lake Dale Branch, and Max Branch tributaries, which are not proposed to be mined. No mining disturbance is proposed west of the Peace River in Sections 4, 9 and 15, Township 33 South, Range 25 East and east of the Peace River in Section 15, Township 33 South, Range 25 East.

Directions to site: From the intersection of U.S. Highway 17 and County Line Road (CR 664) in Bowling Green, Florida, travel east on County Line Road for approximately 2.7 miles to County Road 664 B. The north terminus of County Road 664B at County Line Road roughly bisects the north boundary of the project site.

Latitude & Longitude: Latitude: 27.614926 North
Longitude: -81.771828 West

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Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on **June 10, 2028**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

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Special Conditions:

1. The Florida Department of Environmental Protection, Bureau of Mine Reclamation, Permit Number 0221122-004 dated February 27, 2009 which will expire on February 27, 2029 with its special conditions shall be made a part of this DA permit.
2. The Permittee agrees for the purposes of compliance with this DA permit, where the conditions of the FDEP and DA permits conflict, the DA permit shall apply. A modification of FDEP environmental resource permit 0221122-004 does not automatically constitute a modification of this DA permit. If the Permittee proposes to change any part of the authorized activity, including the mitigation, it is the Permittee's responsibility to request a modification of this DA permit from the Tampa Regulatory Office.
3. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the Corps of Engineers, unless a modification has been applied for and approved. Examples of deviations include impacts to wetlands, changes with mitigation, or changes with the reclamation as shown on the approved permit drawings.

PROJECT MAINTENANCE

4. The project was reviewed and evaluated by the Corps of Engineers, USEPA and USFWS. As a result of the process, the provision to ensure progress of the authorized work will be monitored by the Reviewing Agencies which includes the Corps of Engineers, USEPA and USFWS. An Annual Review by the Reviewing Agencies will evaluate the authorized work, schedule, monitoring program, reporting process, and other aspects of the authorized work. Any such revisions or refinements to the authorized work will require subsequent review by the Corps of Engineers in accordance with 33 CFR 325.7.
 - a. The Permittee will submit to the Corps of Engineers a request to review the project thirty (30) days before the end of the first full calendar year and each subsequent calendar year thereafter, if applicable.
 - b. The Reviewing Agencies review will begin thirty (30) days after receipt of the Permittee's request and/or no later than March 31st of the first year and each subsequent calendar year thereafter, if applicable.
 - c. The Reviewing Agencies will review the file and will inspect the project site for compliance with the terms of the permit, including General, Special Conditions and Monitoring Requirements.
 - 1) If the Reviewing Agencies determine that the Permittee is not in compliance with the terms of the permit, until the Permittee is in compliance with the

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terms and conditions of the permit, the Permittee must not proceed with the next scheduled mine block as demonstrated on Map C-16 .

- 2) As an element of the Annual Review, the Corps shall notify the Permittee of any deficiencies that may be noted and request a plan for remediation.

5. Reporting Address: All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following agencies:

- U.S. Army Corps of Engineers, Regulatory Division, Tampa Regulatory Office, 10117 Princess Palm Ave, Ste 120, Tampa, Florida 33610;
- U.S. Environmental Protection Agency, Wetlands and Marine Regulatory Section, Region 4, 61 Forsyth Street SW, 15th Floor, Atlanta, Georgia 30303;
- U.S. Fish and Wildlife Service, Conservation Planning South Florida Ecological Services, 1339 20th Street, Vero Beach, FL 32960;

The Permittee will reference this permit number, SAJ-1997-4099(IP-MGH), on all submittals. The Permittee will provide documentation within ten (10) days from receipt of ALL monitoring reports that the reports, documentation and correspondence required by the conditions of this permit have been provided to the EPA and FWS.

6. Commencement Notification: Within 10 days from the date of initiating the authorized work for each phase or independent portion of the permitted activity (i.e. Reclamation Unit) as outlined below and detailed on Map C-16 - Mine Plan, Map C-36 - Reclamation Unit Locations and Map E-8 - Reclamation Schedule, the Permittee shall provide to the Corps a written notification of the date of commencement of work authorized by this permit for each phase or independent portion of the permitted activity.

Reclamation Unit Map C-36	Mine Plan Map C-16	Reclamation Schedule Map E-8
MOS-SFMH-PR(1)	2010 - 2011	2015 - 2016
MOS-SFMH-PR(2)	2009 - 2010	2026
MOS-SFMH-PR(3)	2011 - 2013	2016 - 2025
MOS-SFMH-PR(4)	2014 - 2018	2019 - 2025
MOS-SFMH-PB(2)	2013 - 2014	2018 - 2019
MOS-SFMH-LC(1)	2014 - 2018	2019 - 2022
MOS-SFMH-LC(2)	2011 - 2012	2026
MOS-SFMH-LC(3)	2013 - 2014	2026
MOS-SFMH-LC(4)	2015 - 2020	2020 - 2025
MOS-SFMH-LC(5)	2015 - 2018	2020 - 2022
MOS-SFMH-LC(6)	2018 - 2020	2022 - 2024
MOS-SFMH-LD(1)	2018 - 2019	2020 - 2021

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7. The Permittee will require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and will provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, tables, figures and maps, will be available at the project site during mining and mitigation work of this project.

8. Erosion Control: Prior to the initiation of each phase or independent portion of the permitted activity (i.e. Reclamation Unit) authorized by this permit, the Permittee will install erosion control measures along the perimeter of all work areas to prevent off-site discharge and fill material into waters of the United States. . Immediately after completion of the final grading of the land surface for each phase or independent portion of the permitted activity (i.e. Reclamation Unit), all slopes, land surfaces, and filled areas shall be stabilized using sod, degradable mats, or a combination of similar stabilizing materials to prevent erosion. The erosion control measures shall remain in place and be maintained until all authorized work has been completed for each phase or independent portion of the permitted activity (i.e. Reclamation Unit) and the site has been stabilized.

MITIGATION

9. Wetland Avoidance/Minimization Areas: The Permittee will avoid the remaining 1,386.3 ac of waters of the U.S. as listed on Table C-38 - Mining Impacts Summary, Corps Jurisdictional Areas. The 1,386.3 ac consists of 148.1 ac of herbaceous wetlands, 1,220.9 ac of forested wetlands, 15.9 ac of open water, and 1.4 ac of other areas. These natural wetland areas were avoided as part of the permit application review process and therefore will not be disturbed by any dredging, filling, mechanized land clearing, agricultural activities, or other construction work whatsoever. The Corps reserves the right to deny review of any requests for future impacts to waters of the United States.

10. Compensatory Mitigation: Within six (6) months from the date of initiating each phase or independent portion of the permitted activity (i.e. Reclamation Unit) for the authorized work, but in any case no later than two (2) years following completion of mining disturbance, the Permittee shall complete the following mitigation objectives in accordance with the approved compensatory mitigation plan identified as Mitigation Plan - Revision 2, dated March 11, 2010 (attached).

11. The mitigation must be completed as detailed on Table C-126 - Conceptual Wetland Mitigation Sequence and Table C-127 - Conceptual Stream Mitigation Sequence. Any deviation from Tables C-126 and C-127 will require coordination with the Reviewing Agency Team.

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12. Success Criteria: The compensatory mitigation for each reclamation unit outlined in Special Condition 6 above may be determined to be successful when all of the performance standards defined below and in Table C-126 and Table C-127 have been met.

12.1 Procedures

a. The Permittee may request a determination of success when the reclamation unit has attained full success, as defined herein.

b. The request for success determination will be supported by documentation that the implementation of the project has been in accordance with the plans herein. Any member of the Reviewing Agency Team will have the opportunity to schedule and conduct an on-site inspection of the mitigation area under review to verify that the criteria are met.

c. Within sixty (60) days of receipt of the request, the Corps may notify the Permittee and Reviewing Agency Team members whether the compensatory mitigation is successful or is unsuccessful. If the mitigation is unsuccessful the Corps will identify those elements that do not meet the performance standards.

12.2 Final Success Criteria

The Reclamation Unit will be deemed successful when all of the criteria listed in Special Conditions 15 and 16 (Wetland and Streams) have been met after a period of at least one (1) full year without intervention in the form of artificial manipulation of water levels or replanting of desirable vegetation for each reclamation phase or mining unit for at least two (2) year consecutive period.

COMPENSATORY WETLAND MITIGATION

13. Compensatory Wetland Mitigation: The Permittee will provide on-site compensatory mitigation for unavoidable wetland impacts by creating 170.9 ac of herbaceous wetlands, creating 310.3 ac of forested wetlands, restoring 43 ac of wetlands following completion of use of five (5) mine infrastructure corridor stream crossings, granting of a conservation easement on 2020.8 ac in and adjacent to floodplains identified as Conservation Easement Areas A and Aa, granting of a conservation easement on 41.3 ac of wetlands and uplands and 1,416 lf of stream channels associated with the five (5) temporary mine infrastructure corridor stream crossings identified as Conservation Easement B, granting of a conservation easement on 521.8 ac of wetlands, uplands and riparian buffers identified as Conservation Easement Area C. The wetland systems will be constructed in accordance with the design criteria set forth in the Mitigation Plan - Revision 2, dated March 11, 2010 (attached) and Appendix C-23, Fourth Re-Issue Created Wetlands, Hydroperiod Modeling South Fort Meade Mine, Hardee County Tract, January 2008(attached) unless otherwise specifically stated in the Special Conditions of the permit.

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13.1 The Permittee will create the following polygon types as shown on Table C-38, Table E-7, Tables C-39 through C-41, Table C-126, Figures C-6 through C-11 and Map C-26 Sheets 1 through 27:

Forested Wetlands - 310.3 ac

Bay Swamps (FLUCCS 611)
Mixed Wetland Hardwoods (FLUCCS 617)
Wetland Mixed Hardwood (FLUCCS 630)

Herbaceous Wetlands - 170.9 ac

Freshwater Marsh (FLUCCS 641)
Shrub Marsh (FLUCCS 6417)
Wet Prairies (FLUCCS 643)

The plan was developed using historical aerial photographs, soils maps and existing condition observations. As such, the expectation of actual area for each type of system is approximate. The ultimate goal of the mitigation plan is to restore natural processes to the site such that a self-sustaining, functioning ecosystem results.

13.2 Community/Polygon Requirements

a. Forested Wetlands (FLUCCS 611, 617 and 630)

1) Topsoil Placement

- i. After mining operations and backfilling with sand tailings and/or overburden completed, forested wetland mitigation areas will be graded and capped with a minimum of two (2) inches of wetland topsoil in order to achieve the final design elevations. In the event that insufficient wetland topsoil is available, materials such as other appropriate organic material will be used. Mulch will not be used as a substitute for wetland topsoil.
- ii. Bay Swamp (FLUCCS 611) mitigation areas will receive a minimum of one (1) foot of muck or a combination of muck or other appropriate organic material.
- iii. Within sixty (60) days following completion of topsoil placement and grading, the final contours of each forested mitigation area will be surveyed by a registered Florida surveyor utilizing a 50-foot grid interval and spot elevations to a minimum of 0.1 foot. The Permittee will generate an as-built contour map to show one-foot contours in the surrounding uplands, 0.5-foot contours in wetlands and the spot elevations measured.
- iv. The Permittee will include in the Annual Review documentation of the soil profile for each forested wetland

mitigation area. A map will be generated identifying the location for each soil profile.

2) Topography/Hydrology/Lithology

- i. Consistent with the Corps of Engineers Wetlands Delineation Manual (1987) and/or any appropriate regional supplements, all areas to receive credit as wetland plant communities will have soils saturated within 12 inches or less of the ground surface for at least 12.5% of the growing season. To meet this standard the mitigation site will demonstrate inundated or saturated soils for 23 consecutive days during the growing season. In addition to this minimum, hydrology data should reflect a hydrologic regime that is appropriate to the native plant community proposed for establishment.

3) Establishment of Vegetation -

- i. Planting will occur in three (3) phases as outlined on Table 126 - Wetland Mitigation Sequence.
- ii. Phase A planting will occur no greater than thirty (30) days after the grading and muck/topsoil addition has been completed, however no later than one (1) year from the date of completion for grading, with the exception of those wetlands identified on Table C-126 with other mining activities to occur.
- iii. Phase B planting will occur after two (2) years of hydrological monitoring that confirms that the wetland design is properly functioning in terms of hydroperiod depths and durations outlined in Appendix C-23, Table 4-4
- iv. Phase C planting will apply to only forested wetlands. The Permittee will plant shade adapted species and groundcover species identified on Tables C-39, C-40 and C-41 after canopy species have been planted and are trending towards success.

b. Herbaceous Wetlands (FLUCCS 641, 6417, 643)

1) Topsoil Placement

- i. After mining operations and backfilling with sand tailings and/or overburden completed, herbaceous wetland mitigation areas will be graded and capped with a minimum of two (2) inches of wetland topsoil in order to achieve the final design elevations. In the event that insufficient wetland topsoil other appropriate organic material will be used. Mulch will not be used as a substitute for wetland topsoil.

- ii. Wet Prairies (FLUCCS 643) mitigation areas will receive a minimum of two (2) inches of wet prairie topsoil or sod unless suitable material is not available within a reasonable hauling distance.
- iii. Within sixty (60) days following completion of topsoil placement and grading, the final contours of each herbaceous mitigation area will be surveyed by a registered Florida surveyor utilizing a 50-foot grid interval and spot elevations to a minimum of 0.1 foot. The Permittee will generate an as-built contour map to show one-foot contours in the surrounding uplands, 0.5-foot contours in wetlands and the spot elevations measured.
- iv. The Permittee will include in the Annual Review documentation of the soil profile for each herbaceous wetland mitigation area. A map will be generated identifying the location for each soil profile.
- v. Wetland 94 (FLUCCS 641 - 3.12 ac) located in Section 36, will be established by utilizing overburden and no sand will be deposited in the system. The Permittee will monitor and provide soil information for Wetland 94 until it has been deemed successful.

2) Topography/Hydrology/Lithology

- i. Consistent with the Corps of Engineers Wetlands Delineation Manual (1987) and/or any appropriate regional supplements, all areas to receive credit as wetland plant communities shall have soils saturated within 12 inches or less of the ground surface for at least 12.5% of the growing season. To meet this standard the mitigation site shall demonstrate inundated or saturated soils for 23 consecutive days during the growing season. In addition to this minimum, hydrology data should reflect a hydrologic regime that is appropriate to the native plant community proposed for establishment.

3) Establishment of Vegetation -

- i. Planting will occur in three (3) phases as outlined on Table 126 - Wetland Mitigation Sequence.
- ii. Phase A planting will occur as soon as the grading and muck/topsoil addition has been completed, however no later than one (1) year from the date of completion for grading, with the exception of those wetlands identified on Table C-126 with other mining activities to occur.
- iii. Phase B planting will occur after two (2) years of hydrological monitoring that confirms that the wetland

- design is properly functioning in terms of hydroperiod depths and durations outlined in Appendix C-23, Table 4-4
- iv. Phase C planting will apply to only forested wetlands. The Permittee will plant shade adapted species and groundcover species identified on Tables C-39, C-40, and C-41 after canopy species have been planted and are trending towards success.

14. WETLAND PERFORMANCE STANDARD S

14.1 Forested and Herbaceous Created Wetlands

a. The Permittee will meet the criteria for wetlands as detailed in 1987 Corps of Engineers Wetlands Delineation Manual, and/or any regional supplement of the Delineation Manual utilized by the Jacksonville District at the time the permit was issued or mitigation was established.

b. Forested and Herbaceous Created Wetlands - The Permittee will create forested and herbaceous wetlands where the soils will exhibit hydric characteristics by the end of the monitoring period for all created wetlands such that they will meet the minimum jurisdictional criteria.

c. Forested and Herbaceous Created Wetlands - will be considered successful when Special Conditions 13 and 14 have been met without intervention in the form of irrigation, removal of undesirable vegetation or replanting of desirable vegetation for at least a two (2) consecutive year period after removal of the perimeter ditch and berm system.

d. Forested and Herbaceous Created Wetlands - Vegetation cover will consist of plants identified in Tables C-39 through C-44 "Proposed Plantings", should there be any discrepancies between Tables C-39 through C-44, the Permittee will submit a request for approval prior to plantings. The forested and herbaceous created wetlands will be constructed as detailed in Figures C-6 through C-11, should there be any discrepancies between Figures C-6 through C-11, the Permittee will submit a request for approval prior to construction. Note: FAC+ and wetter = plant species listed in the National Wetland Plant List at http://www.usace.army.mil/CECW/Documents/cecwo/reg/nwp/NWPL_announcement.pdf

e. Forested and Herbaceous Created Wetlands - Manual or chemical treatment will be implemented if cogon grass (*Imperata cylindrica*) coverage exceeds five (5) percent within 300 feet of compensatory mitigation areas.

f. Less than 5 percent cover of Category I and II invasive exotic plant species, pursuant to the 2005 list established by the Florida Exotic Pest Plant Council at <http://www.fleppc.org>, shall include the nuisance species primrose willow (*Ludwigia peruviana*), dogfennel (*Eupatorium capillifolium*), Bermudagrass (*Cynodon* sp.), torpedo grass (*Panicum repens*), and cattail (*Typha* sp.)

g. Canopy and shrub measurements shall be limited to those indigenous species that contribute to the shrub, subcanopy, and canopy strata of the mature forested wetlands/floodplains in the Peace River basin.

h. The Permittee shall utilize the information submitted as the primary source of reference wetland information, although other wetlands located within the Peace River basin may be used. Several wetlands of each community type to be created should be selected and submitted to the Corps of Engineers for review and approval. Additional stage and hydroperiod data shall be collected from the referenced wetlands. The Permittee shall submit a proposed sampling plan including vegetation and hydrology sampling methods, locations and sampling frequencies to the Corps of Engineers for approval within one year of permit issuance.

14.2 Forested and Herbaceous Preserved Wetlands

a. The Permittee will maintain the baseline hydrology of the preserved wetlands consisting of 1531.2 ac of forested wetlands and 319 ac of herbaceous wetlands throughout the life of the project and monitoring.

b. The Permittee will maintain the WRAP scores or higher as detailed on Table C-1 throughout the life of the project and monitoring periods. The Permittee will conduct a revised WRAP assessment every five (5) years. The Permittee will utilize the same version of WRAP used for all wetland baseline data and monitoring.

c. The Permittee will implement manual or chemical treatment if cogon grass (*Imperata cylindrica*) coverage exceeds five (5) percent within 300 feet of Preserved Areas identified as (Conservation Easements A, Aa and B).

d. Less than 5 percent cover of Category I and II invasive exotic plant species, pursuant to the 2005 list established by the Florida Exotic Pest Plant Council at <http://www.fleppc.org>, shall include the nuisance species primrose willow (*Ludwigia peruviana*), dogfennel (*Eupatorium capillifolium*), Bermudagrass (*Cynodon sp.*), torpedo grass (*Panicum repens*), and cattail (*Typha sp.*)

14.3 Forested Created Wetlands - 310.3 ac

a. Bay Swamps (FLUCCS 611)

- A minimum of 80 percent of the number of trees and 70 percent cover of the groundcover vegetation will consist of appropriate wetland species (i.e. FAC+ or wetter) and/or plants listed on Table C-39 "Proposed Plantings in Bay Swamps, FLUCCS 611, revised 11/18/09".

- Tree density will be equal to or greater than 400 trees per ac with trees equal to or greater than 12 feet in height consisting of at least five (5) tree species listed in Table C-39. The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-39.

- Shrub density will be equal to or greater than 200 trees per ac with shrubs equal to or greater than four (4) feet in height consisting of at least five (5) shrub species listed in Table C-39. The Permittee will request

approval prior to planting from the Corps should the plantings deviate from Table C-39.

- No single groundcover species will constitute greater than 30 percent relative cover.

- Canopy and shrub measurements shall be limited to those indigenous species that contribute to the shrub, subcanopy, and canopy strata of the mature forested wetlands/floodplains in the Peace River basin.

- Exotic and/or nuisance species will not exceed 10 percent relative cover in the tree canopy, shrub and groundcover.

b. Mixed Wetland Hardwoods (FLUCCS 617)

- A minimum of 80 percent of the number of trees and 70 percent cover of the groundcover vegetation will consist of appropriate wetland species (i.e. FAC+ or wetter) and/or plants listed on Table C-40 "Proposed Plantings in Mixed Wetland Hardwoods, FLUCCS 617, revised 11/18/09".

- Tree density will be equal to or greater than 400 trees per ac with trees equal to or greater than 12 feet in height consisting of at least five (5) tree species listed in Table C-40. The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-40.

- Shrub density will be equal to or greater than 200 trees per ac with shrubs equal to or greater than four (4) feet in height consisting of at least five (5) shrub species listed in Table C-40. The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-40.

- No single groundcover species will constitute greater than 30 percent relative cover.

- Canopy and shrub measurements shall be limited to those indigenous species that contribute to the shrub, subcanopy, and canopy strata of the mature forested wetlands/floodplains in the Peace River basin.

- Exotic and/or nuisance species will not exceed 10 percent relative cover in the tree canopy, shrub and groundcover.

- Prior to planting, the Permittee will submit a planting plan for approval which will include the location and density for Needle Palm (*Rhapidophyllum hystrix*).

c. Wetland Mixed Hardwood (FLUCCS 630)

- A minimum of 80 percent of the number of trees and 70 percent cover of the groundcover vegetation will consist of appropriate wetland species (i.e. FAC+ or wetter) and/or plants listed on Table C-41 "Proposed Plantings in Mixed Forest Swamps, FLUCCS 630, revised 11/18/09".

- Tree density will be equal to or greater than 400 trees per ac with trees equal to or greater than 12 feet in height consisting of at least five (5) tree species listed in Table C-41. The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-41.

- Shrub density will be equal to or greater than 200 trees per ac with shrubs equal to or greater than four (4) feet in height consisting of at least five (5) shrub species listed in Table C-41. The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-41. Early successional species such as Carolina willow (*Salix caroliniana*), saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*) and elderberry (*Sambucus canadensis*) do not count toward meeting this requirement; however these species shall be included in the monitoring reports.

- No single groundcover species will constitute greater than 30 percent relative cover.

- Canopy and shrub measurements shall be limited to those indigenous species that contribute to the shrub, subcanopy, and canopy strata of the mature forested wetlands/floodplains in the Peace River basin.

- Exotic and/or nuisance species will not exceed 10 percent relative cover in the tree canopy, shrub and groundcover.

14.4 Herbaceous Created Wetlands - 170.9 ac

a. Freshwater Marsh (FLUCCS 641)

- A minimum of 80 percent of the herbaceous vegetation for each of the zones listed on Table C-42 "Proposed Herbs to be Planted in Freshwater Marsh (FLUCCS 641), revised 11/18/09" with at least 50% of this cover being plant species listed as FAC or wetter, be rooted for at least 12 months, and be reproducing naturally.

- No single species in any zone will constitute more than 30% of the total cover.

- The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-42.

- No single groundcover species will constitute greater than 30 percent relative cover.

- Exotic and/or nuisance species will not exceed 10 percent relative cover in the tree canopy, shrub and groundcover.

b. Shrub Marsh (FLUCCS 6417)

- A minimum of 80 percent of the herbaceous vegetation for each of the zones listed on Table C-44 "Proposed Herbs to be Planted in Shrub Marsh (FLUCCS 6417), revised 11/18/09" with at least 50% of this cover being plant species listed as FAC or wetter, be rooted for at least 12 months, and be reproducing naturally.

- No single species in any zone will constitute more than 30% of the total cover.

- Early successional species such as Carolina willow (*Salix caroliniana*), saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*) and elderberry (*Sambucus canadensis*) do not count toward meeting this requirement; however these species will be included in the monitoring reports.

- The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-44.
- No single groundcover species will constitute greater than 30 percent relative cover.
- Canopy and shrub measurements shall be limited to those indigenous species that contribute to the shrub, subcanopy, and canopy strata of the mature forested wetlands/floodplains in the Peace River basin.
- Exotic and/or nuisance species will not exceed 10 percent relative cover in the tree canopy, shrub and groundcover.

c. Wet Prairies (FLUCCS 643)

- A minimum of 80 percent of the herbaceous vegetation for each of the zones listed on Table C-43 "Proposed Herbs to be Planted in Wet Prairie Marsh (FLUCCS 643), revised 11/18/09" with at least 50% of this cover being plant species listed as FAC or wetter, be rooted for at least 12 months, and be reproducing naturally.
- No single species in any zone will constitute more than 30% of the total cover.
- The Permittee will request approval prior to planting from the Corps should the plantings deviate from Table C-43.
- No single groundcover species will constitute greater than 30 percent relative cover.
- Ephemeral wetlands as defined on Table C-43 are not included as part of the Federal Mitigation Plan and will not be evaluated as part of success of the mitigation plan.

15. WETLAND MONITORING

15.1 General Monitoring Requirements

a. The Permittee will perform a routine wetland delineation, to meet full performance standards, by verifying the total acreage of wetlands and waters achieved on site. Wetland areas will be staked for final inspection by the Corps. Property boundaries for the mitigation site will be marked as well. The delineation will be included/reported in the final monitoring report, if not before. It is recognized that the actual acreage of aquatic resources/wetland will vary from that in the plans; however, it will approach or exceed the acreage specified in the permit.

b. The Permittee will conduct an initial WRAP assessment and assessments every five (5) years on each preserved wetland within Conservation Easement Areas A, Aa, and B. The Permittee will utilize the same version of WRAP used for all wetland baseline data and monitoring.

c. The Permittee will conduct annual WRAP assessments for ten (10) years on ALL created wetlands within Conservation Area C. The assessments will

continue annually in light of the mitigation area being released for success. The Permittee will utilize the same version of WRAP used for all wetland baseline data and monitoring.

d. The Permittee will have representative monthly hydrological monitoring for all preserved wetlands (Conservation Easements Area A, Aa, and B). The monitoring will be conducted monthly until the expiration date of the permit. In the event, the permit is extended the Permittee will continue monitoring until the extended expiration date of the DA permit. Rainfall will be monitored at representative locations on the mine site and will be reported with all hydrological data.

e. The Permittee will achieve the above performance standards as detailed in Special Condition 14 by the end of the 5-year monitoring period for each reclamation phase or mining unit which is detailed in Special Condition 6, with no maintenance during the 5th year of monitoring. In the event that the above performance standards have not been achieved the Permittee must undertake a remediation program approved by the Corps. The Corps reserves the right to fully evaluate, amend, approve or reject the proposed remediation plan. Additionally, the Corps may recommend that the Permittee develop an alternate compensatory mitigation proposal to fully offset the functional loss that occurred as a result of not meeting the performance standards within the prescribed timeframe.

f. To show compliance with the performance standards the Permittee will complete the following for each reclamation phase or mining unit:

- 1) Perform a time-zero monitoring event of the wetland mitigation area(s) within 60 days of completion of mitigation objectives.
- 2) Submit the time-zero report to the Corps within 60 days of completion of the monitoring event. The report will include a paragraph depicting baseline conditions of the mitigation site(s) prior to initiation of the mitigation objectives and a detailed plan view drawing of all created, enhanced and/or restored mitigation areas.
- 3) Perform annual monitoring of the wetland mitigation area(s) for a period of no less than five (5) years subsequent to completion of the mitigation objectives.
- 4) Submit annual monitoring reports to the Corps within 60 days of completion of the monitoring event.
- 5) Monitor the mitigation area(s) and submit annual monitoring reports to the Corps until released in accordance with Special Conditions 12, 13, 14, and 15 of this permit.

g. Annual monitoring reports must follow the report format for assessing mitigation sites. The Applicant shall submit all documentation to the Corps on 8 ½ -inch X 11-inch paper, and include the following:

- 1) Project Overview (1-5 Pages)

- i. Corps Permit Number
- ii. Name and contact information of Permittee and Consultant
- iii. Name of party responsible for conducting the monitoring and the date(s) the inspection(s) was conducted
- iv. A summary paragraph defining the purpose for the approved project, acreage and type of aquatic resources impacted, and mitigation acreage and type of aquatic resources authorized to compensate for the aquatic impacts.
- v. Written description on the location and any identifiable information to locate the site perimeter(s)
- vi. Directions to the mitigation site (from a major highway).
- vii. Dates compensatory mitigation commenced and/or was completed
- viii. Short statement on whether the performance standards are being met
- ix. Dates of any recent corrective or maintenance activities conducted since the previous report submission
- x. Specific recommendations for any additional corrective or remedial actions

2) Requirements (1-5 Pages): List the monitoring requirements and performance standards, as specified in the approved mitigation plan and special conditions of this permit, and evaluate whether the compensatory mitigation project site is successfully achieving the approved performance standards or trending towards success.

3) Summary Data (maximum 15 pages): Data must be provided to substantiate the success and/or potential challenges associated with the compensatory mitigation project. Any photo documentation must be dated and clearly labeled with the direction from which the photo was taken, and be identified on the appropriate maps.

4) Maps (maximum 15 pages): Maps must be provided to show the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan.

5) Conclusions (1-5 pages): A general statement must be included describing the conditions of the compensatory mitigation project. If performance standards are not being met, a brief explanation of the

difficulties and potential remedial actions proposed by the Permittee, including a timetable, must be provided.

h. If the compensatory mitigation fails to meet the performance standards at the end of 5 years after the initiation of mitigation activities have occurred for each reclamation phase or mining unit, the compensatory mitigation will be deemed unsuccessful. Within 60 days of notification by the Corps that the mitigation is unsuccessful, the Permittee shall submit to the Corps an alternate compensatory mitigation proposal to fully offset the functional loss that occurred as a result of the project. The alternate mitigation proposal may be required to include additional mitigation to compensate for the temporal loss of wetland function associated with the unsuccessful compensatory mitigation activities. The Corps reserves the right to fully evaluate, amend, approve or reject the alternate compensatory mitigation proposal. Within 120 days of Corps approval, the Permittee will complete the alternate compensatory mitigation proposal.

i. The Permittee's responsibility to complete the required compensatory mitigation will not be considered fulfilled until the Permittee has demonstrated mitigation success and has received written verification from the Corps. A mitigation area which has been released will require no further monitoring or reporting by the Permittee; however the Permittee, Successors and subsequent Transferees remain perpetually responsible to ensure that the mitigation area(s) remain in a condition appropriate to offset the authorized impacts in accordance with General Condition 2 of this permit.

j. The Permittee will notify the Corps of Engineers whenever the Permittee believes that the mitigation within each reclamation phase or mining unit is ready for release, but in no event earlier than one (1) year after the mitigation is completed.

k. The Permittee will submit annual narrative reports indicating the status of the project on or before the first day of March. The report will include the following information:

- 1) Date permitted activity was begun or projected commencement date if work has not begun on-site;
- 2) Brief description and extent of work (site preparation, mining, and restoration) completed since the previous report or since the permit was issued. Indicate on copies of the permit drawings those areas where work has been completed. This description shall include details on construction of berms, recharge ditches adjacent to unmined wetlands, clearing, wetland severance, muck removal, storage and placement, and completed earthwork and planting;
- 3) Brief description and extent of work (site preparation, mining, and restoration) anticipated in the next year. Indicate on copies of the permit drawings those areas where it is anticipated that work will be done.

15.2 Vegetation Monitoring

a. Permanent straight line sampling transects will be established, plotted onto project drawings and a current aerial photograph of the site, across each proposed plant community of the mitigation site.

b. Sufficient transects will be established to provide full representation of all plant communities within the site, which might include more than one of each type.

c. Each transect will consist of a series of 1.0 square meter quadrants (no fewer than 10) at regular or random intervals (5-10m suggested interval). The number of quadrants depends on system complexity and the size of each plant community for which credit is sought. A rough guideline is 2 quadrants per ac in each plant community as a minimum.

d. The plant sampling will be done in May/June and August/September each year following the initial planting, throughout the monitoring period.

e. Data will be reported by plant community, and by transect. A total plant species list will be compiled over the entire site for which credit is sought. Data may be summarized by plant community for which credit is sought in monitoring reports, however, the full sampling data will be provided in an appendix to the annual monitoring report.

f. Species dominance will be determined by calculating importance values, with at least the following two parameters: frequency and percent cover. Absolute percent aerial cover data will be reported, though the frequency and cover may be relative to calculate Importance Values (e.g. $RF + RC = IV$).

15.3 Hydrology Monitoring

a. Within each plant community for which credit is sought, wetland hydrology will be independently demonstrated from data gathered from monitoring wells and/or piezometers placed throughout the mitigation site.

b. The plans for well/piezometer placement will be approved by the Corps prior to approval of the mitigation. Monitoring data will be collected from the wells/piezometers at a minimum on a weekly basis throughout the growing season. Automated continuous water level recorders are encouraged, and should be downloaded monthly to avoid more significant loss of data in the event of vandalism or other failure. For the hydrology standard, the growing season is defined as April 15 - October 20.

16. WETLAND ADAPTIVE MANAGEMENT PLAN

16.1 If the compensatory mitigation project cannot be constructed in accordance with the approved mitigation plans, the Permittee will notify the Jacksonville District. A significant modification of the compensatory mitigation project requires approval from the Jacksonville District.

- a. If monitoring or other information indicates that the compensatory mitigation project is not progressing towards meeting its performance standards as anticipated, the responsible party shall notify the Jacksonville District as soon as possible. The Jacksonville District will evaluate and pursue measures to address deficiencies in the compensatory mitigation project. The Jacksonville District will consider whether the compensatory mitigation project is providing ecological benefits comparable to the original objectives of the compensatory mitigation project.
- b. The Jacksonville District, in consultation with the responsible party (and other federal, tribal, state, and local agencies, as appropriate), will determine the appropriate measures. The measures may include site modifications, design changes, revisions to maintenance.
- c. Requirements, and revised monitoring requirements. The measures shall be designed to ensure that the modified compensatory mitigation project provides aquatic resource functions comparable to those described in the mitigation plan objectives.
- d. Performance standards may be revised in accordance with adaptive management to account for measures taken to address deficiencies in the compensatory mitigation project. Performance standards may also be revised to reflect changes in management strategies and objectives if the new standards provide for ecological benefits that are comparable or superior to the approved compensatory mitigation project. No other revisions to performance standards will be allowed except in the case of natural disasters.

COMPENSATORY STREAM MITIGATION

17. Compensatory Stream Mitigation: The Permittee will provide on-site compensatory mitigation for unavoidable stream impacts by creating 46 stream segments totaling 61,016 linear feet of streams associated with 132 acres of created and preserved buffer derived from 60 linear feet on each side of the 61,016 channel, as shown on Table C-115, Table C-120 and Map C-28. The stream segments shall be constructed in accordance with the design criteria set forth in the Mitigation Plan-Revision 2 (attached), Appendix C-24, Appendix C-32 and Appendix E-8, unless otherwise specifically stated in the Special Conditions of the permit.

17.1. Stream Location and Final Design: Stream channels shall be created at the locations shown on Map C-28 by applying the design parameters listed in Table C-115 for each segment. Prior to constructing each stream channel, the lithology of the stream valley shall be mapped and the topography surveyed. Based upon the topography and lithology maps, the stream design shall be modeled using USACE's Hydraulic Engineering Center River Analysis System (HEC-RAS), or equivalent model, to determine the bankfull flow and velocity and the frequency of bankfull events. The results shall be forwarded to USACE for review and approval prior to stream channel construction.

17.2. Stream Channel Construction: Stream channel construction shall be accomplished as shown on Figures C-73 through C-78 and Table C-115. Prior to commencing physical work the overall plan, profile, and cross-section and construction drawings shall be prepared by a stream restoration specialist and forwarded to USACE for review and approval.

17.3. Qualified Environmental Monitor: The Permittee will ensure that a qualified environmental monitor with previous experience in stream restoration design and construction will be present during the construction of the Stream Compensatory Mitigation. The environmental monitor must supervise the construction of the Stream Mitigation and must submit semi-annual reports to the Corps, FWS and EPA documenting the progress of the construction in accordance with the SFM-HC stream mitigation plan and the construction schedule. The environmental monitor must provide guidance to the contractor on specific techniques for all in stream work and especially for the construction and placement of temporary diversions, woody debris, riffles and pools. The reports shall be submitted in accordance with the Monitoring special condition of the permit. Prior to the start of any physical work, the Permittee chosen Environmental Monitor shall submit qualifications and work history to the USACE for review.

17.4. Reference Reach Streams: A total of 5 representative stream segments were identified and modeled by the Permittee as part of the application process. These systems are known as the reference reach streams. The data derived from the reference reach streams has resulted in the Permittee's design to create Rosgen (1996) Level II classification streams, the position in the post reclamation landscape, and the estimated

bankfull discharges, bankfull mean velocities and frequency of bankfull events. Prior to construction, the design of each of the proposed stream segments will be reassessed and modified as necessary to achieve the design criteria set forth in Appendix C-24 (Geomorphology Assessment and Stream Creation Design Guidance, South Fort Meade Hardee County Tract, attached) and Appendix E-8, (Modeling of Proposed Reclaimed Streams on the Mosaic South Fort Meade Mine, attached). The data from the reference reach streams will be used to create the final drawings, and will be utilized in conjunction with the monitoring requirements for the created stream segments. The Permittee shall submit semi-annual data on the reference reach segments biological, physical and chemical conditions. This data shall be submitted in accordance with the Monitoring Special Conditions of this document, and shall be submitted in conjunction with the stream mitigation monitoring reports. Each reference reach will be cross-referenced with created stream segments in the submittal of the semi-annual monitoring reports.

17.5. Mitigation Stream Buffer: The Permittee shall create and preserve 60 linear feet on each side of the entire created stream channel consistent with Table C-122 and will demonstrate the following specifics:

- a. Stream buffers will be planted with native vegetation that represents both woody and herbaceous species. Cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at <http://www.fleppc.org>, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermudagrass (*Cynodon* spp.), Bahiagrass (*Paspalum notatum*), and cattail (*Typha* spp.), shall total less than 10 percent. Species selection will be based on the data presented in Table C-122, Table C-70 and Table C-71 with the following exceptions:
 - i. In FLUCFCS 321 (palmetto prairie), over 66% of the cover would be shrubs, with saw palmetto the dominant species. In FLUCFCS 329 (other shrub and brush), a shrub cover of over 66% would be present, either without a dominant species or a dominant species other than saw palmetto (e.g. gallberry or wax myrtle). In FLUCFCS 330 (mixed rangeland), grassland cover of over 33% would be mixed with shrub cover of less than 66%. Less than 10% invasive exotic plant species coverage.
 - ii. In FLUCFCS 321 & 329, shrub cover of at least 300 per acre would be achieved and total vegetative cover would be greater than 80%. Bahia and Bermuda grasses would not be planted and would be subject to maintenance to prevent invasive exotic populations to less than 10 %. Cogon grass would not be allowed to exceed 10% in uplands and 5% within 300 feet of mitigation areas.
 - iii. In FLUCFCS 410 (upland coniferous forests), slash pine would comprise over 66% of the canopy, with the remaining species listed on

Table C-71 comprising the remainder; and less than 10% invasive exotic species plant coverage. In FLUCFCS 434 (hardwood/conifer mixed forests), either upland hardwoods or conifers would comprise over 66% of the canopy.

- iv. In FLUCFCS 410 & 434, a minimum of 200 trees per acre and 200 shrubs per acre would be achieved. Bahia and Bermuda grasses would not be planted and would be subject to maintenance to prevent invasive exotic species populations to less than 10%. Cogon grass would not be allowed to exceed 10% in uplands and 5% within 300 feet of mitigation areas.
- b. Wetland stream buffers shall have 400 trees per acre that are 12 feet tall, 100 shrubs per acre, 80 percent wetland ground cover, less than 10 percent dominance of invasive exotic species, with the species dominance as shown on Tables C-39 through C-44 and as measured in reference wetlands.
- c. Upland stream buffers shall have 200 trees per acre and 200 shrubs per acre, or 300 shrubs per acre, 80 percent ground cover, less than 10 percent dominance of invasive exotic species, with the species dominance as shown on Tables C-70 and C-71.
- d. Wetlands occurring within stream buffers may be used for wetland mitigation purposes. However, should sediments accrue in the wetlands and streams during construction of the projects or before stabilization of the site, the Corp determines that wetlands and/or streams have been adversely affected; the Corps may require compensatory mitigation at a minimum of a one to one ratio.

17.6. Temporary Impact Mitigation: The Permittee will mitigate for the temporary impacts to five temporary infrastructure corridor crossings associated with 1,416 linear feet of temporary impact. The removal of the temporary sand fill and geotextile fabric utilized for the crossing will expose the existing stream channel and banks. To mitigate for the impact from the crossing the Permittee shall restore the temporary impacted bank by returning it to its natural grade, and by planting native species.

18. STREAM AS-BUILT CHANNEL SURVEY

18.1. As-Built Channel Survey: Within 60 days of the construction of each stream mitigation section, a field survey must be conducted by a licensed land surveyor to identify ground elevations on a 25-linear foot grid pattern. As-built ground elevations and/or invert elevations must be identified for all Monitoring Stations, structures, riffles, pools, floodplains, flow lines, tops of banks, low points, high points and other critical points. The as-built survey must be certified by the licensed surveyor or by a registered professional engineer to be in conformance with the design and specifications of the Stream Restoration Plans. The survey should document the dimension, pattern, and profile of the restored channel. Permanent cross-sections should be established at approximate frequencies of one per 20 (bankfull-width) lengths. In general, the locations should be selected to represent approximately 50% pools and 50% riffle areas. Flexibility in the location and frequency will be allowed for cross-sections and should be based on best professional judgment. The selection of locations should always include areas that may be predisposed for potential problems. In the case of very narrow streams, two cross-sections per 1,000 linear feet will generally be sufficient. The as-built survey should also include photo documentation at all cross-sections and structures, a plan view diagram, a longitudinal profile and vegetation information for at least six cross-sections (or all cross sections if less than six required for project). Subsequent semi-annual surveys will be required per instructions on the monitoring. The completed topographic, as built survey must be submitted to the Corps for review and acceptance and must be used as a "Base Map" for all required monitoring reports associated with the Monitoring special condition of the permit. The limits of restored streams and upland buffers must be shown and quantified in acreages and linear feet on the Base Map.

19. STREAM PERFORMANCE STANDARDS

19.1. Stream Performance Standards: Based on the objectives of the stream mitigation plan, the Permittee must meet the objectives of the criteria listed within the SFM-HC mitigation plan. The following performance standards must be met for a period of five consecutive years to be considered successful:

- a. The stream creation segments will contain a Rosgen Level II Class designation considering the sinuosity, stream slope, bankfull cross sectional area, average channel length, bankfull width, bankfull depth, approximate entrenchment ration, and curvature for all stream segments as indicated on Table C-115, Stream Mitigation Details in the SFM Mitigation Plan-Revision 2. The Permittee will create Rosgen Type "C" and "E" streams as indicated in Appendix C-24.
- b. The stream segments will function as natural and stable streams with an active floodplain in accordance with natural stream design parameters set forth in Appendix C-24.

- c. Each stream segment will contain the standards set forth within Table C-130, Mitigation Stream Performance Standards for Release, SFM Mitigation Revision 2. These standards require the following:
 - i. Each stream segment shall contain species richness and diversity within the range of the reference stream segments.
 - ii. Bankfull flow magnitude, frequency and depth shall be similar to the post-hydrological modeling results.
 - iii. Each stream segment shall have a minimum FDEP visual habitat assessment score (HAS) of 86, with a minimum buffer width of 60 feet on each side and stable stream banks.
 - iv. Each stream segment shall meet all Class III water quality standards.
- d. Each mining unit will contain an average FDEP HAS score of 105 prior to reconnection.
- e. The 132.23 acre stream buffer, comprised of 60 linear feet on each side of the created channel, shall contain at least 75% of planted species survival, and will be consistent with the plantings density and species presented in SFM-Mitigation Revision 2.

20. STREAM MONITORING

20.1. Monitoring Reports: The Permittee will monitor the created streams and adjacent riparian buffer by submitting semi-annual reports commencing six months after each stream system has been created and thereafter until the created system has been successfully established. Monitoring of stream compensation sites will be conducted for a minimum of ten years and will be in accordance with the Conceptual Stream Mitigation Sequence, Table C-127. Semi-annual monitoring will be required for a minimum of three years, followed by seven years of annual monitoring. If a stream segment is not trending toward success after the initial three year semi-annual monitoring period, the Corps may determine that semi-annual monitoring reporting will be extended until the stream segment demonstrates success. Monitoring will occur until the project has been demonstrated as a functionally mature, self-sustaining system which has demonstrated five consecutive years of successfully meeting the performance standards in SFM Mitigation Plan-Revision 2. The Permittee will be responsible for the monitoring program. The performance standards monitored will demonstrate if the stream mitigation is developing, has developed, or is unsuccessful. All reports will be mailed to the US Army Corps of Engineers, Jacksonville District, Enforcement Section, Post Office Box 4970 Jacksonville, Florida 32232-0019, the Environmental Protection Agency, Region 4, 61 Forsyth Street SW, Atlanta, GA, 30303 and

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the U.S. Fish & Wildlife Service, South Florida Field Office, 1339 20th Street, Vero Beach, FL 32960-3559.

To show compliance with the performance standards the Permittee shall complete the following for each reclamation phase or mining unit:

- a. Perform semi-annual monitoring of the stream mitigation area(s) for a period of no less than 10 years subsequent to completion of the mitigation objectives.
- b. Submit semi-annual monitoring reports to the Corps within 30 days of completion of the monitoring event.
- c. Monitor the stream mitigation area(s) and submit semi-annual monitoring reports to the Corps until released in accordance with the Special Conditions associated with this permit.

20.2. Stream Monitoring Report Guidelines: Semi-annual monitoring reports must follow the report format for assessing stream mitigation sites. The Permittee should submit all documentation to the Corps on 8 ½ -inch X 11-inch paper, and include the following:

a. Project Overview:

- 1) Corps Permit Number
- 2) Name and contact information of Permittee and Consultant
- 3) Name of party responsible for conducting the monitoring and the date(s) the inspection(s) was conducted
- 4) Indication if stream segment is a Rosgen Type C or E
- 5) Current HAS score
- 6) A summary paragraph defining the purpose for the approved project, the linear foot and type of aquatic resources impacted, and the mitigation linear foot and type of aquatic resources authorized to compensate for the aquatic impacts.
- 7) Written description on the location and any identifiable information to locate the site perimeter(s)
- 8) Directions to the mitigation site (from a major highway).
- 9) Dates compensatory mitigation commenced and/or was completed
- 10) Dates of any recent corrective or maintenance activities conducted since the previous report submission

b. Requirements: List the monitoring requirements and performance standards, as specified in the stream mitigation plan and special conditions of this permit, and evaluate whether the compensatory stream mitigation project site is successfully achieving the approved performance standards or trending towards success. Please include the following specifics:

- 1) The Base Map.
- 2) Time, dates and exact place of sampling or measurements;
- 3) Names of individuals who collected data;
- 4) Supporting documentation such as general observations relative to existing conditions, rainfall data, readings, calculations, and benchmark data;
- 5) Photographs showing upstream and downstream views of the stream restoration and the buffers taken from each Monitoring Station.
- 6) Each photograph must be labeled with the identity of the Monitoring Station, the photograph orientation, the date and time, and a brief description of the photograph.
- 7) Description of stream type, pattern, sinuosity, entrenchment ratio, width/depth ratio, slope, profile, pool-riffle complex, floodplain interaction, and channel material.
- 8) Physical stream measurements and photographs taken at each cross section to document the stability of the stream bed and banks.
- 9) Location, profile and cross section of all structures and an evaluation of their function and stability.
- 10) General habitat assessment including documentation of wildlife or signs of wildlife observed.
- 11) Benthic macroinvertebrate sampling data and scores, if applicable
- 12) Vegetative data taken at each Monitoring Station specifying survival rate of planted woody and herbaceous species. Species composition (including all species present, as well as an indication of dominant species) for all planted surfaces must be documented.
- 13) Documentation of all significant storm events and a description of those effects on the stream mitigation.
- 14) Direct comparison of the stream mitigation to the Reference Stream in accordance with the project goals as identified in the Stream Restoration Plans and specific to the monitoring criteria listed herein.
- 15) Outline corrective measures planned to remediate any area of the stream mitigation where the project goals have not been achieved (e.g., additional grading, planting, lowering structures, control and

abate undesirable plant species, etc.).

16) Summary of past monitoring report data and assessment of stream segment's overall trends. Summary must include cumulative index of past monitoring trends.

c. Summary Data: Data must be provided to substantiate the success and/or potential challenges associated with the compensatory stream mitigation project. Any photo documentation must be dated and clearly labeled with the direction from which the photo was taken, and be identified on the appropriate maps.

d. Maps: Maps must be provided to show the location of the compensatory stream mitigation site relative to other landscape features, habitat types, locations of photographic reference points, cross-sections, transects, sampling data points, and/or other features pertinent to the mitigation plan.

e. Conclusions (1-5 pages): A general statement must be included describing the conditions of the compensatory stream mitigation project. If performance standards are not being met, a brief explanation of the difficulties and potential remedial actions proposed by the Permittee, including a timetable, must be provided.

20.3. Rain Gauge Installation: Each Section which contains created stream segments will have a rain gauge appropriately located and installed to collect and monitor daily rainfall data. The rain gauges will be used only until the subject stream reaches have experienced 5 bankfull rainfall events.

20.4. Bankfull Rainfall Event Monitoring: Monitoring after the first 5 bankfull rainfall events will be recorded within each proposed stream section. The Permittee shall submit data from rain gages to the Corps, EPA and FWS on a semi-annual basis. Post bankfull event, the Permittee shall provide a narrative for any adaptations or changes made to the subject stream reaches.

20.5. Monitoring for un-mined stream segments: Monitoring will be performed for all undisturbed stream segments located within the SFM-HC project site. Water table piezometers or staff gauges will be installed and datum surveyed during all phases of mining and reclamation within the SFM-HC project site. The Permittee will submit a map indicating the exact locations of the piezometers and quarterly data to the Corps, EPA and FWS on a semi-annual basis.

21. STREAM ADAPTIVE MANAGEMENT

21.1. Performance Standards Contingency Plan: The Permittee will achieve the above performance standards by the end of 10-year monitoring period for each reclamation phase or mining unit, with no maintenance during the 10th year of monitoring. In the event that the above performance standards have not been achieved, the Permittee must undertake a remediation program approved by the Corps. The Corps reserves the right to fully evaluate, amend, approve or reject the proposed remediation plan. Additionally, the Corps may recommend that the Permittee develop an alternate compensatory stream mitigation proposal to fully offset the functional loss that occurred as a result of not meeting the performance standards within the prescribed timeframe.

21.2. Stream Mitigation Failure: The Permittee shall adhere to the following:

- a. If the compensatory stream mitigation does not adhere to the Conceptual Stream Mitigation Sequence, Table C-127, and fails to implement mitigation measures consistent with the time frames associated with the mitigation plan, the Corps may require an additional mitigation proposal to offset the functional time lag. In addition, the Corps may prevent the further release of mining units, until the stream mitigation failure has been resolved.
- b. If the compensatory stream mitigation fails to meet the performance standards at the end of 10 years after the initiation of mitigation activities have occurred for each reclamation phase or mining unit, the compensatory stream mitigation will be deemed unsuccessful. Within 60 days of notification by the Corps that the mitigation is unsuccessful, the Permittee shall submit to the Corps an alternate compensatory mitigation proposal to fully offset the functional loss that occurred as a result of the project. The alternate mitigation proposal may be required to include additional mitigation to compensate for the temporal loss of stream function associated with the unsuccessful compensatory mitigation activities. The Corps reserves the right to fully evaluate, amend, approve or reject the alternate compensatory mitigation proposal. Within 120 days of Corps approval, the Permittee will complete the alternate compensatory mitigation proposal.

21.3. Modifications to Mitigation Schedule or Work: The Permittee must perform the proposed stream creation in accordance with the plans and schedule contained in the aforementioned stream mitigation proposal and documents. If, during construction, a need to modify the project design is identified, the Permittee must notify the Corps within 60 calendar days.

22. STREAM CREATION RELEASE

22.1. Stream Creation Release: The Permittee's responsibility to complete the required compensatory stream mitigation will not be considered fulfilled until the Permittee has demonstrated mitigation success and has received written verification from the Corps. A mitigation area which has been released will require no further monitoring or reporting by the Permittee; however the Permittee, Successors and subsequent Transferees remain perpetually responsible to ensure that the stream mitigation segments remain in a condition appropriate to offset the authorized impacts in accordance with the General Conditions, Special Conditions and the following specifics:

- a. The Permittee shall notify the Corps whenever the Permittee believes that the mitigation within each reclamation phase or mining unit is ready for release, but in no event earlier than five years after the mitigation is completed.
- b. If, at any time during the monitoring period, the Corps determines that the stream mitigation is successful, the Corps may terminate the monitoring period, and the Corps may release a portion of, or the entire stream segment.
- c. The final monitoring report shall include an assessment of the condition of the mitigation site following completion of the stream mitigation site monitoring. To ensure an objective evaluation, the Corps will require the applicant provide and finance an independent post-construction assessment. The assessment should include:
 - i. Summary of the original or modified stream mitigation goals and a discussion of the level of goal attainment.
 - ii. Characterization of the planned stream construction including Rosgen stream classification, pattern, profile, dimension, and hydrologic regime.
 - iii. An assessment (quantitative or qualitative) of functions and values performed by the site.
 - iv. A calculation of the linear footage of streams on site determined by the presence of an ordinary high water mark; a scale drawing of stream reaches; and supporting data sheets.
 - v. A comparison of the area and extent of delineated streams in the stream mitigation area and extent of streams required in the mitigation plan (i.e. post construction survey).

- vi. Photographs of the stream mitigation sites taken from the same locations as the monitoring photographs.
- vii. A description of any significant problems and any solutions during construction and monitoring of the mitigation site(s).

CONSERVATION EASEMENT

23. **Conservation Easement:** The Permittee shall have a legally sufficient conservation easement prepared to ensure to the Corps' satisfaction that the areas referenced in the **Compensatory Mitigation Special Condition** will remain in their natural state in perpetuity. The conservation easement(s) will encompass approximately the following acre(s) of wetlands and acre(s) of uplands.

C.E Area	Herbaceous Land Cover	Forested Land Cover	Total
A	446.9	1561.7	2008.6
Aa	-	12.2	12.2
B	-	41.3	41.3
C	193.5	328.3	521.8
Total	640.4	1934.5	2583.9

These natural preserve areas will not be disturbed by any dredging, filling, land clearing, agricultural activities, planting, or other construction work whatsoever except as required or authorized by this permit. The Permittee agrees that the only future utilization of the preserved areas in question will be as a purely natural area. To show compliance with this condition the Permittee shall complete the following:

23.1 Within 30 days from the date of initiating the authorized work or 12 months from the effective date of this permit, whichever first occurs, submit to the Corps the draft conservation easement document with a legal description, survey, and scale drawings, of the area in question. The Corps shall have all rights of the Grantee in the conservation easement. The following paragraph shall be incorporated in the conservation easement document:

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"Rights of U.S. Army Corps of Engineers (Corps)- The Corps shall be a party to any modification, alteration, release, or revocation of the conservation easement, and shall review and approve as necessary any additional structures or activities that require approval."

23.2 Within 30 days of Corps' approval of the draft conservation easement, record the easement in the public records of Hardee County, Florida. A certified copy of the recorded document, plat, and verification of acceptance from the grantee shall be forwarded to the Corps within 60 days of Corps' approval of the draft conservation easement.

23.3 Within 30 days from the date of initiating the authorized work or 12 months from the effective date of this permit, whichever first occurs, submit to the Corps a title insurance commitment with the draft conservation easement document, **IN FAVOR OF THE GRANTEE**, for the property which is being offered for preservation to show that the Permittee has clear title to the real property and can legally place it under a conservation easement. Any existing liens or encumbrances on the property shall be subordinated to the conservation easement. At the time of recordation of the conservation easement, a title insurance policy shall be provided to the Corps in an amount equal to the current market value of the property.

23.4 In the event this permit is transferred, proof of delivery of a copy of the recorded conservation easement to the subsequent Permittee or Permittees shall be submitted to the Corps together with the notification of permit transfer.

24. Perpetual Conservation: The Permittee shall maintain the areas referenced in the **Compensatory Mitigation** Special Condition in their natural state in perpetuity. The Permittee agrees that the only future utilization of these areas will be as a purely natural area and the following uses and/or activities will be prohibited except as required or authorized by this permit:

1. Construction or placing buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground. Elevated boardwalks, hiking trails and camping areas will be permitted as long as they do not involve any of the other prohibited uses listed below:
2. Dumping or placing soil or other substance or material as landfill or dumping or placing of trash, waste or unsightly or offensive material.
3. Removal or destruction of trees, shrubs, or other vegetation.
4. Excavation, dredging or removal of loam, peat, gravel, soil, rock, or other material substance in such a manner as to affect the surface.
5. Surface use, except for purposes that permit the land or water area to remain predominantly in its natural condition.
6. Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation.

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7. Acts or uses detrimental to such retention of land or water areas.
8. Acts or uses detrimental to the preservation of the structural integrity or the physical appearance of sites or properties of historical, architectural, or cultural significance.

25. The Permittee will place three (3) Conservation Easements (CE) over mitigation areas which will commence on different dates. All three CE's will be granted to FDEP/State of Florida and the Corps will maintain enforcement rights. The CE's are detailed on Map C-29 - Conservation Easement Areas and Table C-121 - Conservation Easement Vegetation Cover Breakdown Acres. Any deviation from the established conservation easement cannot be performed without a modification to this permit instrument. The ability to modify or remove this conservation easement is neither implied nor guaranteed. If the conservation easement is removed for any reason, the Permittee will provide appropriate mitigation to compensate for functional wetland loss.

25.1 Conservation Easement Area A: will include 446.9 ac of herbaceous land cover and 1,561.7 ac of forested land cover for a total of 2,008.6 ac. CE Area A will account for the lands along the floodplains of the Peace River and Little Charlie Creek and Max Branch, Lake Dale Branch and Parker Branch tributaries. The Permittee will record CE Area A thirty (30) days prior to mine disturbance.

25.2 Conservation Easement Area Aa: will include 12.2 ac of forested land cover and the area associated with stream segment number 7f and wetland number 11-9 (FLUCCS 611). The 12.2 ac will be added to CE Area A which will increase the total acreage to 2020.80 ac. The Permittee will record CE Area Aa thirty (30) days prior to mine disturbance.

25.3 Conservation Easement Area B: will include 44 ac of forested land cover. CE Area B will consist of the floodplain portions of the five (5) infrastructure stream crossings and other others that total 44 ac and identified as "Crossing Property" within the CE and the locations identified on Figure C-4 - Stream Crossings and Table C-119 - Mine Infrastructure Temporary Corridor Crossings Impact and Restoration Details. An instrument of perpetual conservation easement or an amendment to CE Area A/Aa will be executed and recorded for each crossing location. The Permittee will complete and submit to the Corps Baseline Documentation Reports for each reclaimed crossing concurrent with the execution and recording of each easement or amendment.

25.4 Recording Sequence

a. First Restored Crossing Area - Within six (6) months of completion of contouring and initial revegetation of the first restored crossing area as required by the Permit, the Permittee will:

- 1) conduct or cause to be conducted a title search encompassing the First Crossing Area;
- 2) prepare or cause to be prepared a Baseline Documentation Report, legal description, boundary survey, and scale drawings of the First Crossing area; and
- 3) submit the foregoing documents and executed Easement Area B Easement, with legal description, the Corps and to FDEP.

b. Within 90 days, the Permittee will cause the Easement Area B Easement to be recorded in the land records of Hardee County at the Permittee's expense. A certified copy of the recorded document, plat and verification of acceptance by the Grantee will be forwarded to the Corps within sixty (60) days of recordation.

c. Subsequent Restored Crossing Areas - Within six (6) months of completion of contouring and initial revegetation of each subsequent crossing area as required by the Permit ("Subsequent Crossing Area"), the Permittee will:

- 1) Conduct or cause to be conducted a title search encompassing the Subsequent Crossing Area;
- 2) Prepare or cause to be prepared a Baseline Documentation Report, legal description, boundary survey, and scale drawings of the Subsequent Crossing Area;
- 3) Submit the foregoing documents and an executed Amendment to Conservation Easement Area B Easement to the Corps and to the Department to add the Subsequent Crossing Area legal description to the Easement Area B Easement

d. Within 90 days of execution by the Department, the Permittee will cause the Amendment to the Easement Area B Easement to be recorded in the land records of Hardee County at Permittee's expense. A certified copy of the recorded document, plat, and verification of acceptance by the Grantee will be forwarded to the Corps within sixty (60) days of recordation.

25.5 Conservation Easement Area C: will consist of 193.5 ac of herbaceous land cover and 328.3 ac of forested land cover. CE Area C will consist of the wetlands, streams and upland stream buffers to be established as mitigation as shown on Map C-29. Table C-126 - Conceptual Wetland Mitigation Sequence provides a timeline for each mitigation area. As a result of the sequencing, the CE Area C provides language for incorporating these mitigation areas on a timely basis after establishment of wetland hydrology. An instrument of perpetual conservation easement will be required for CE Area C.

a. A Baseline Documentation Report will be completed and submitted to the Corps for the Easement Area C lands concurrent with the execution and recording of each easement or amendment and will incorporate the reference wetlands and streams identified in the DA Permit. The Baseline Documentation Report will consist of reports, maps, photographs, reference streams and wetlands identified in the DA permit, and other documentation that the Permittee and Corps agree to provide, collectively, and accurate representation of the Easement Area C lands.

b. Within six (6) months of establishment of wetland hydrology in the Easement Area C lands in accordance with the Corps Permit, but in any case no later than two (2) years following completion of contouring and initial revegetation of area, the Permittee will:

- 1) Conduct or cause to be conducted a title search encompassing the Easement Area C lands;
- 2) Prepare or cause to be prepared a Baseline Documentation Report, legal description, boundary surveys, and scale drawings of the area;
- 3) Submit the title search, survey, and executed Easement Area C Easement, with legal description to the Department, with a copy provided to the Corps;

c. Within 90 days of execution by the Department, the Permittee will cause the Easement Area C Easement to be recorded in the land records of Hardee County at Permittee's expense. A certified copy of the recorded document, plat, and verification of acceptance by the Grantee will be forwarded to the Corps within sixty (60) days of recordation.

HISTORICAL PROPERTIES

26. **Historical Properties:** The Permittee will conduct a Phase I survey prior to any disturbance within Section 23, Township 33 South, Range 25 East, Hardee County, Florida. The Phase I Cultural Resource Survey Report will be provided to the Corps, Tampa Regulatory Office within ninety (90) days prior to disturbance. The Phase 1 Cultural Resource Survey Report will be conducted in accordance with the "Secretary of Interior Standards & Guidelines for Archaeology & Historic Preservation" and the "Florida Cultural Resources Management Standards & Operation Manual." The Corps will coordinate the Phase 1 document with the Florida Department of State, Division of Historical Resources to ensure compliance with Section 106 of the National Historic Preservation Act and 33 CFR Part 325, Appendix C.

BIOLOGICAL OPINION

27. The Corps permit does not authorize you to take an endangered species; in particular the federally threatened eastern indigo snake (*Drymarchon corais couperi*), the threatened Audubon's crested caracara (*Polyborus plancus audubonii*, caracara), and the endangered wood stork (*Mycteria Americana*). In order to legally take a listed species, you must have a separate authorization under the Endangered Species Act (ESA) (e.g. an ESA Section 10 permit or a Biological Opinion (BO) under ESA Section 7, with an "incidental take" provisions with which you must comply). The enclosed US Fish and Wildlife Service (FWS) BO contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO dated May 28, 2010, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The FWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

Eastern Indigo Snake Protection Measures

28. **Eastern Indigo Snake Protection Measures:** The Permittee shall comply with U.S. Fish and Wildlife Service's "Standard Protection Measures for the Eastern Indigo Snake" dated February 12, 2004 and provided as an Attachment of this permit."

Fill Material

29. **Fill Material:** The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance, in toxic amounts in accordance with Section 307 of the Clean Water Act.

Regulatory Agency Changes

30. **Regulatory Agency Changes:** Should any other regulatory agency require changes to the work authorized or obligated by this permit, the Permittee is advised that a modification to this permit instrument is required prior to initiation of those changes. It is the Permittee's responsibility to request a modification of this permit from the Tampa Regulatory Office.

PERMIT NUMBER: SAJ-1997-4099-IP-MGH
PERMITTEE: Mosaic Fertilizer, LLC
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Self-Certification

31. Self-Certification: Within 60 days of completion of the authorized work or at the expiration of the construction window of this permit, whichever occurs first, the Permittee shall complete the "Self-Certification Statement of Compliance" form and submit to the Corps. In the event that the completed work deviates, in any manner, from the authorized work, the Permittee shall describe, on the Self-Certification Form, the deviations between the work authorized by the permit and the work as constructed. Please note that the description of any deviations on the Self-Certification Form does not constitute approval of any deviations by the Corps.

As-Builts

32. As-Builts: Within 60 days of completion of the authorized work or at the expiration of the construction window of this permit, whichever occurs first, the Permittee shall submit as-built drawings of the authorized work and a completed As-Built Certification Form to the Corps. The drawings shall be signed and sealed by a registered professional engineer and include the following:

a. A plan view drawing of the location of the authorized work footprint (as shown on the permit drawings) with an overlay of the work as constructed in the same scale as the attached permit drawings (8½-inch by 11-inch). The drawing should show all "earth disturbance," including wetland impacts, water management structures, and any on-site mitigation areas.

b. List any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the As-Built Certification Form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or As-Built Certification Form does not constitute approval of any deviations by the U.S. Army Corps of Engineers.

c. The Department of the Army Permit number.

d. Include pre- and post-construction aerial photographs of the project site, if available.

PERMIT NUMBER: SAJ-1997-4099-IP-MGH
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Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

() Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

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PERMITTEE: Mosaic Fertilizer, LLC
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4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

PERMIT NUMBER: SAJ-1997-4099-IP-MGH
PERMITTEE: Mosaic Fertilizer, LLC
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Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Thomas E. Myers II 06/14/10
(PERMITTEE) (DATE)

THOMAS E. MYERS II
(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

[Signature] 06/14/10
(DISTRICT ENGINEER) (DATE)
Alfred A. Pantano, Jr.
Colonel, U.S. Army
District Commander

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When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

SIGNATURE) (DATE) _____ (TRANSFeree-

(NAME-PRINTED)

(ADDRESS)

(CITY, STATE, AND ZIP CODE)

PERMIT NUMBER: SAJ-1997-4099-IP-MGH
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***Attachments to Department of the Army
Permit Number SAJ-1997-4099-IP- MGH
Approximate Total Number of Pages 2523***

1. PERMIT DRAWINGS: 507 pages, dated June 10, 2010
 - MFR-2 - maps - 220 pages
 - MFR-2 - figures - 131 pages
 - MFR-2 - tables - 156 pages
2. WATER QUALITY CERTIFICATION: Specific Conditions of the water quality permit/certification in accordance with General Condition number 5 on page 2 of this DA permit. 630 pages.
3. Special Conditions: FWS Biological Opinion dated May 28, 2010. 133 pages
4. SPECIAL CONDITION - Standard Protection Measures for the eastern indigo snake (*Drymarchon corais couperi*) 1 page
5. Mitigation Plan -2 dated March 11, 2010. 1249 pages
 - Mitigation Plan 2 - text - 139 pages
 - Mitigation Plan 2 - maps - 216 pages
 - Mitigation Plan 2 - tables - 156 pages
 - Mitigation Plan 2 - figures - 16 pages
 - Mitigation Plan 2 - exhibits - 254 pages
 - Mitigation Plan 2 - Appendices
 - Appendix C-23 Fourth Re-Issue - Created wetlands, Hydroperiod modeling - 253 pages*
 - Appendix C-24 Geomorphology & Stream Creation - 99 pages*
 - Appendix E-8 HEC-RAS Modeling of Created Streams - 116 pages*
6. As-Built Certification 3 Pages

DeSoto Mine Avoidance & Minimization

Briefing Document Mosaic Comp

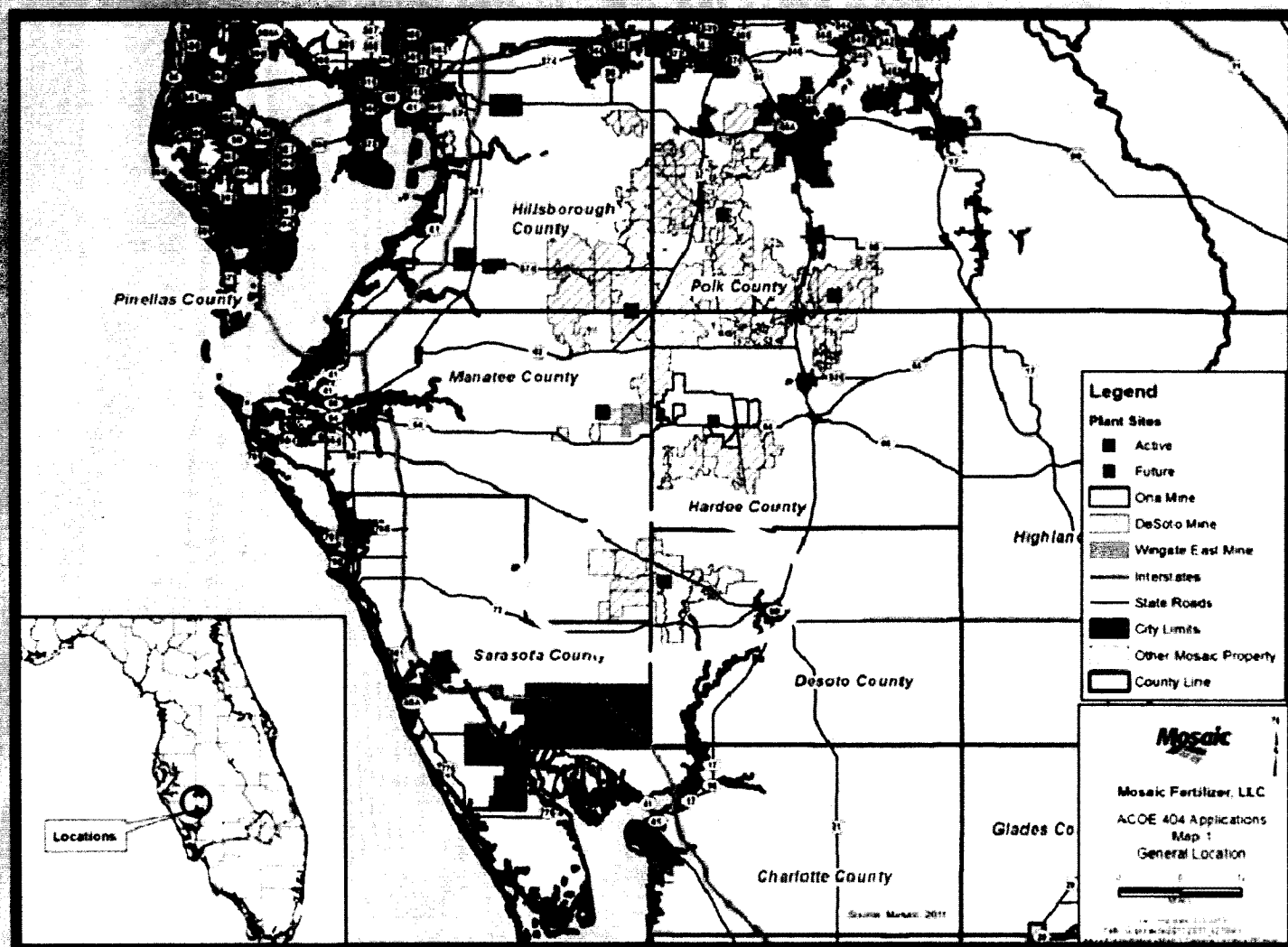


DeSoto Mine

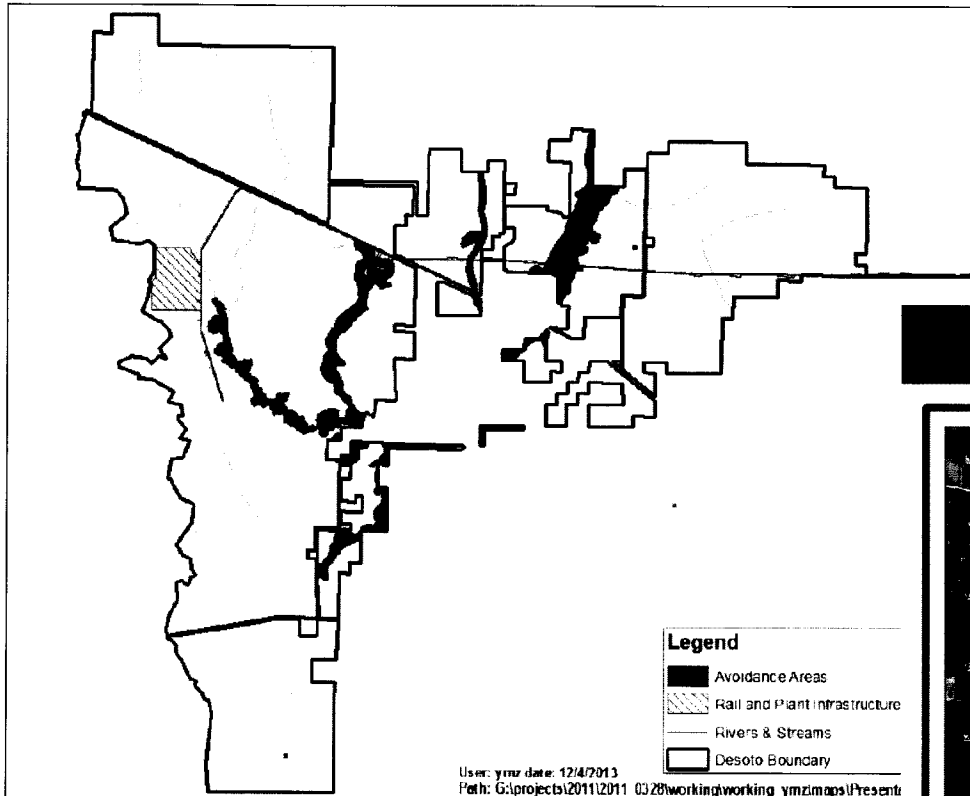
Mosaic's Desires are to:

- Review with EPA their Avoidance and Minimization steps
- Receive an EPA letter saying we approve/support their DeSoto Mine Avoidance and Minimization
- Review their Ona Mine Compensatory Mitigation Plan with EPA
- Receive feedback from EPA if their CMP is going in the correct direction

DeSoto Mine

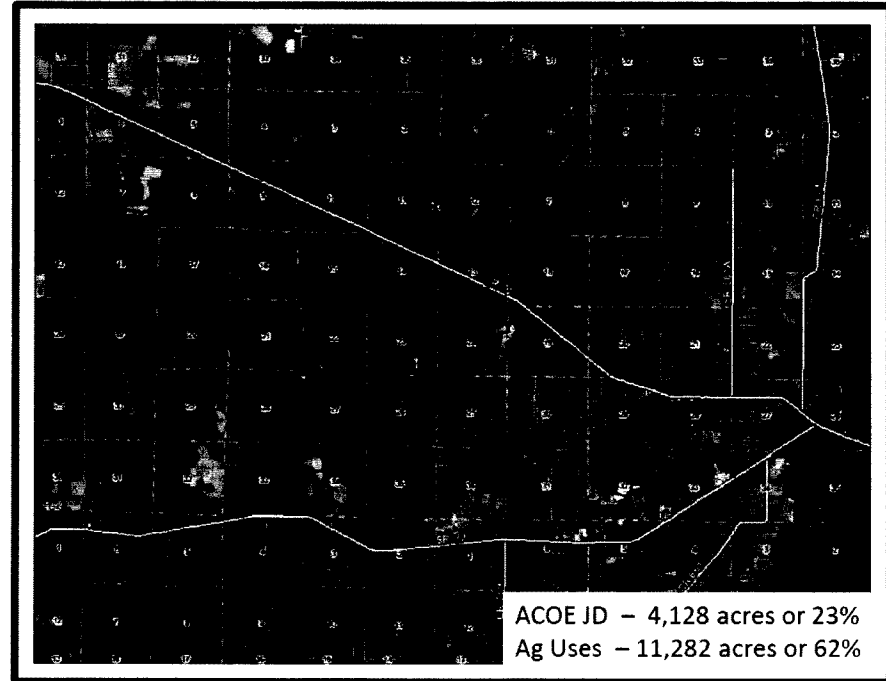


404 Application, June 2011 – Avoidance of Impacts



Desoto Mine

DeSoto Mine – Wetlands



Land Uses

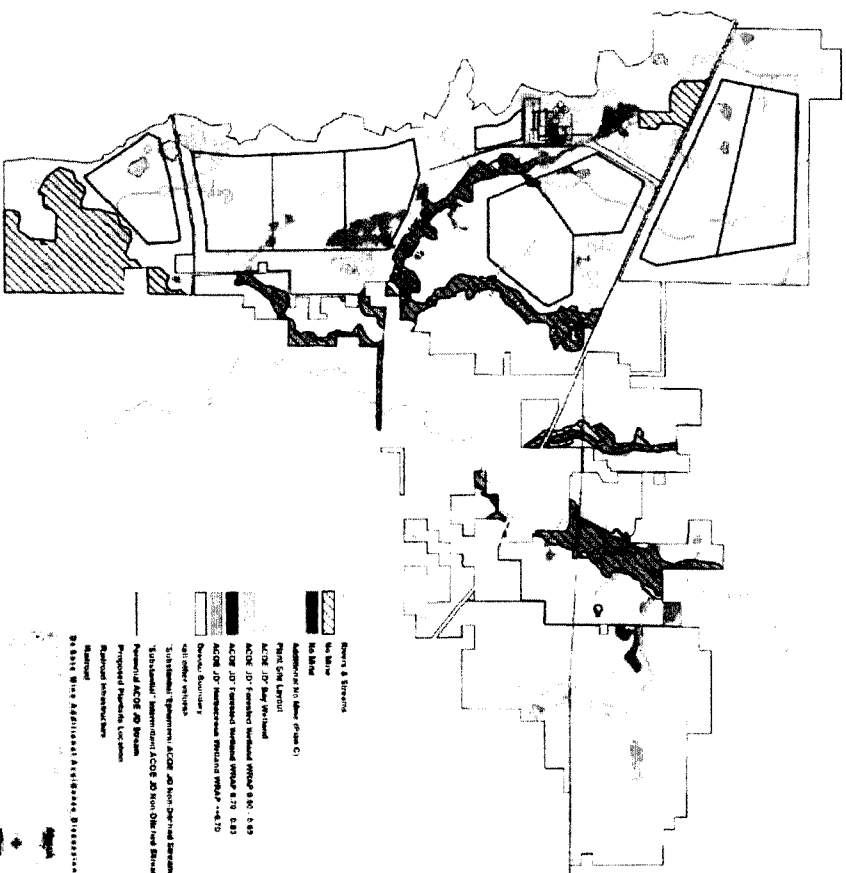
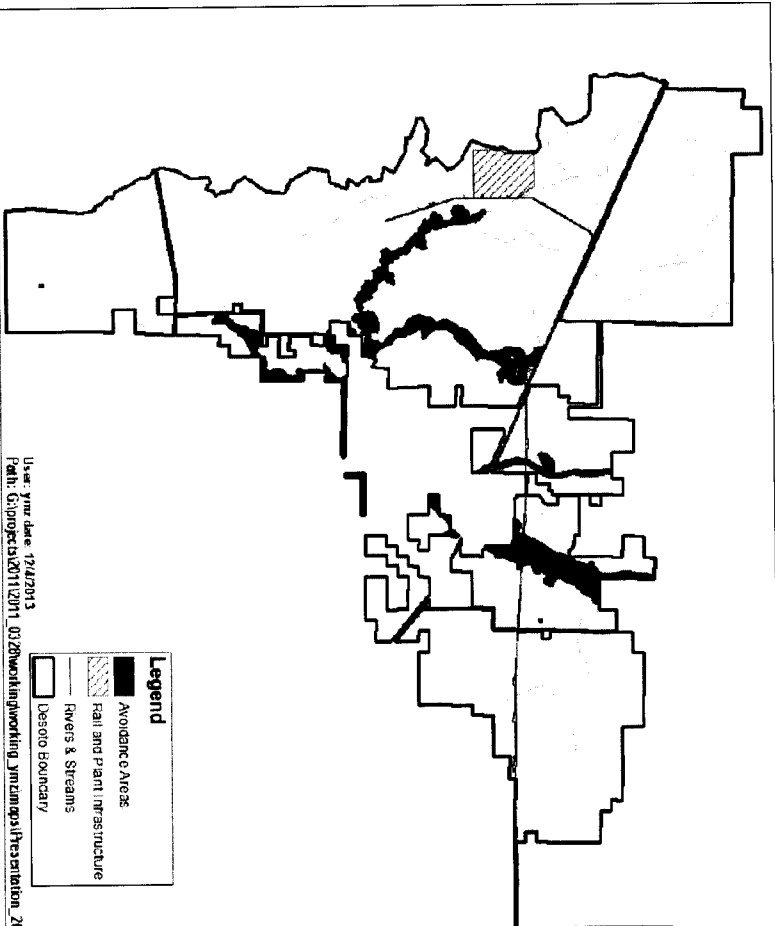
Total Area – 18,287

Ag Lands – 11,282 (62%)

ACOE JD – 4,128 (23%)

Desoto Mine

Plan C – Avoidance of Impacts



DeSoto Mine

LAND USE	Total acres	June 2012 Public Notice Avoided (acres)	Dec 2013 Plan C Avoided* (acre)	Total Plan C Avoided
Total Site	18,287			
Total Acres Avoided		1,027	2,079	11%
Wetlands	4,145	781	1,368	33%
Forested Wetlands	2,364	739	1,111	47%
Bay Heads	248	87	129	52%
HQ Herbaceous Wetlands**	355	~1	135	38%
Streams	129,456 lf***	65,381 lf	73,790 lf	57%
Perennial Streams	13,010 lf	13,010 lf	13,010 lf	100%
Intermittent & Ephemeral Streams	116,446 lf	52,371 lf	60,780 lf	52%

*Central Florida Phosphate District Areawide EIS (AEIS). Chapter 5.4 Compensatory Mitigation Sequencing

**Wetland Rapid Assessment Protocol – HQ = High Quality score ≥ 0.7 out of 1.0 Consistent with AEIS Framework

***lf = linear feet

DeSoto Mine

- Mosaic Accurately Applied the Framework for CMP Sequencing
 - Avoided Forested Systems Adjacent to Intermittent and Perennial Streams
 - Avoided Bay Heads – Difficult to replace
 - Avoided High Quality Herbaceous Marshes Adjacent to Forested Wetlands & Perennial & Intermittent Streams
 - Created Herbaceous Marshes can meet success criteria within 3 to 5 years
 - Avoiding 100% of Perennial Streams



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
10117 PRINCESS PALM AVENUE, SUITE 120
TAMPA, FLORIDA 33610

June 1, 2012

Regulatory Division
Tampa Section

PUBLIC NOTICE

Permit Application No. SAJ-2011-01968(IP-MEP)

TO WHOM IT MAY CONCERN: This district has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344) as described below:

APPLICANT: Mosaic Fertilizer, LLC
13830 Circa Crossing Drive
Lithia, Florida 33547

WATERWAY & LOCATION: The proposed DeSoto Mine project is located on 18,287 acres within the Peace River basin, in wetlands and open waters associated with Brandy Branch Creek, Buzzard Roost Branch Creek and Horse Creek. The project is located along State Road 72 and State Road 70 near Arcadia in Sections 31-33 and 34, Township 36 South Range 23 East, Sections 1-24, 26-29 and 32-34, Township 37 South Range 23 East, Sections 4-11 and 15-20, Township 37 South, Range 24 East and Sections 3-5 and 8-10, Township 38 South, Range 23 East in DeSoto County, Florida.

Directions to the site are as follows: From Tampa, take I-75 South to SR 70 East. Travel on SR 70 East for approximately 28 miles. DeSoto Mine site is generally located west of the intersection of SR 70 and SR 72, north of SR 70, and south SR 72 near Arcadia.

LATITUDE & LONGITUDE: Latitude 27.2715° North
Longitude 81.9842° West

PROJECT PURPOSE:

Basic: To extract phosphate ore.

Overall: To extract phosphate ore from the mineral reserves located in the Central Florida Phosphate District (CFPD) and to construct the associated infrastructure required to extract and process the phosphate ore at separation/beneficiation facilities recognizing that the ore extracted must be within a practicable distance to a new or existing beneficiation plant.

PROPOSED WORK: The applicant requests a 22 year permit to mine phosphate ore located on 18,287 acres of property in DeSoto County, Florida. The proposed project will impact approximately 3,129.9 acres of Corps-jurisdictional wetlands consisting of 1,595.1 acres of forested wetlands, and 1,534.8 acres of herbaceous wetlands. Additionally, the proposed project

will impact 122.9 acres of Corps jurisdictional open waters and ditches, and 64,474 linear feet of streams. Impacts to Corps jurisdictional wetlands and waters will result from discharges of dredged and fill material in support of land clearing and mining activities, construction of a beneficiation plant, railroad, and four clay storage areas (two of which will contain multi-compartments) and installation of power transmission lines, pipelines (for hydraulically transferring matrix, clay, sand and water), four infrastructure/dragline/railroad crossings of Horse Creek, Brandy Branch Creek and Buzzard Roost Branch Creek and two railroad utility-only crossings of Brandy Branch Creek and a tributary on the eastern edge of the property.

Mining is proposed to be conducted in discrete mining blocks after those areas are sequestered from surrounding areas by ditch and berm recharge systems. Following excavation, mined ore will be hydraulically transported to the proposed DeSoto beneficiation plant with resulting sand and clay returned to mine cuts as fill in support of subsequent State reclamation and federal compensatory mitigation for impacted aquatic resources as mining is completed. Fill will consist of: (1) existing viable topsoil from certain wetland areas proposed to be used as a seed source and a growing medium for wetlands to be created; (2) overburden spoil and sand tailings residuals proposed to be used to backfill the mined or disturbed areas, as necessary, to the design elevations to facilitate the creation of uplands, lakes, and wetlands; and (3) consolidated clay residuals. The ditch and berm recharge systems are removed and the mined blocks reconnected to surrounding areas after subsequent reclamation and mitigation of aquatic resources is successfully completed.

The predominant source of water for the proposed DeSoto Mine will be collected rainfall. Additional sources of water supply will include groundwater contained in the overburden sands and the ore matrix, and groundwater piped down from production wells located at the applicant's decommissioned Ft. Green Plant. The proposed pipeline routes are located in Polk, Hardee and DeSoto Counties, as shown on the attached map. Two alternative routes are depicted and are approximately thirty five miles in length. The proposed water supply pipeline would extend from the applicant's Ft. Green facility in Polk County to the proposed DeSoto Mine plant site in Desoto County south of SR 70. One of the Alternative routes shown consists of utilizing CSX corridor, while the second alternative route follows applicant ownership or controlled lands to the greatest extent practicable. The objective of this water pipeline is to supply make-up water as needed to operate the DeSoto Mine. The proposed work is depicted on the attached 12 pages of drawings.

CULTURAL RESOURCES: The Corps is aware of historic properties within or in close proximity of the permit area. The Corps will initiate consultation with the State Historic Preservation Office and those federally recognized tribes with concerns in Florida and the Permit Area, and the Advisory Council on Historic Preservation as applicable pursuant to 33 CFR 325, Appendix C and Section 106 of the National Historic Preservation Act, by separate letter.

AVOIDANCE AND MINIMIZATION INFORMATION: The applicant has provided the following information in support of efforts to avoid and/or minimize impacts to the aquatic environment: The applicant is avoiding mining within the 100-year flood plain of Horse Creek and its direct tributaries. This includes avoiding 781 acres of wetlands at Brandy Branch, Buzzards Roost Branch, Buzzards Roost Branch Tributary, Horse Creek, Oak Hill Branch and

the Peace River. The applicant is also proposing to minimize impacts through several minimization measures including ditch and berm recharge systems around the mined areas, water control measures, water conservation and recycling and other measures.

COMPENSATORY MITIGATION: The applicant has offered the following compensatory mitigation plan to offset unavoidable functional loss to the aquatic environment: As mitigation for impacting 3,129.9 acres of wetlands and 122.9 acres of open waters and ditches, the applicant is proposing to establish 1,935.8 acres of forested wetlands and 1,439.3 acres of herbaceous wetlands onsite of equal to or greater functional quality (using accepted functional assessment methods) than pre-mined wetlands. As mitigation for impacting 64,474 linear feet of streams, the applicant is proposing to reestablish 65,762 linear feet of streams onsite also of equal to or greater than functional quality than pre-mined streams. To accomplish this, the applicant proposes to utilize a watershed approach in recreating wetlands type for type and streams such that there is improved aquatic resource connectivity over that which currently exists. Mitigation will be completed as soon as practicable after mining or mining activities are completed in each mine block. If the proposed onsite compensatory mitigation for aquatic resources is not sufficient, then the applicant intends to provide off-site mitigation to fully compensate for impacts to aquatic resources. The federal mitigation plan will be more completely developed as State reclamation and mitigation plans are developed.

EXISTING CONDITIONS: The 18,287 acre DeSoto Mine site containing 3,909.8 acres of wetlands (consisting of 2,334.6 acres of forested wetlands and 1,575.2 acres of herbaceous wetlands), 124.6 acres of open waters or ditches and 128,639 linear feet of streams, lies within the Peace River basin. The DeSoto Mine site is located between the Coastal Lowlands and the Central Florida Ridge physiographic provinces. The land surface is flat with a slight north to south regional slope. DeSoto Mine is located in the Peace River watershed positioned in the middle reach of Horse Creek which drains into the tidally influenced downstream reach of the Peace River. Approximately 14.7 stream miles downstream, Horse Creek drains into the Peace River, and approximately 16.7 stream miles further down the Peace River flows into Charlotte Harbor. The DeSoto Mine site is drained north to south by Horse Creek a perennial stream, with its main tributaries Brandy Branch, Buzzard Roost Branch, and Buzzard Roost tributary draining from the west into Horse Creek. Other low-magnitude (first and second order), unnamed, and intermittent tributaries, drain from the east and west into Horse Creek. Horse Creek discharges into the Peace River

Approximately 62 percent of the proposed DeSoto Mine site has been converted from native vegetative cover into pastures, row-crop fields, citrus groves, roads, or livestock watering ponds with corresponding impacts to Corps-jurisdictional aquatic areas. The applicant has submitted WRAP data indicating that the functional values provided by Corps jurisdictional wetlands on the DeSoto Mine site vary widely with areas converted to residential or agricultural uses providing lower functions than do jurisdictional areas of native cover. Similarly, areas subject to Corps jurisdiction due to soils and hydrology (*i.e.*, rangeland or upland forest communities) generally provide lower function than vegetated wetland community types (*i.e.*, mixed wetland hardwood forests or freshwater marshes). In addition many shrub-dominated areas were historically freshwater marshes or wet prairies that have been ditched and drained, converted to

pasture or cropland, or not allowed to burn. In addition, of the 64,474 linear feet of streams to be impacted, approximately 58% or 37,269 linear feet have been ditched.

ENDANGERED SPECIES: The applicant has conducted multiple seasonal wildlife surveys over the years of 2006-2011 documenting federally listed wildlife species have occurred on the DeSoto Mine site. The federally-listed species confirmed onsite include the threatened Eastern indigo snake (*Drymarchon couperi*), the threatened Northern crested caracara (*Polyborus plancus audubonii*), and the endangered Wood stork (*Mycteria Americana*). The project has suitable habitat and is within the consultation area for the threatened Florida scrub-jay (*Aphelocoma coerulescens*), however no scrub jays were detected during species-specific surveys. The project is also within the consultation area for the endangered Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), however no Florida grasshopper sparrow habitat was identified on site. Portions of the project are within two miles of a Florida panther (*Puma concolor coryi*) road crossing and a panther dispersal pathway.

Using the February 19, 2007, effect determination key for the Florida panther (A-B), the Corps has determined that the proposal may affect the Florida panther. Using the January 25, 2010, effect determination key for the Eastern indigo snake (A-B-C-D), the Corps has determined that the proposal may affect the Eastern indigo snake. Using the January 25, 2010, effect determination key for the wood stork (A-B-C-E), and in the absence of a foraging value analysis of the impacted or mitigation wetlands, the Corps has determined that the proposal may affect the wood stork. Based upon the presence of a Northern crested caracara communal roost on-site, and an observed nest adjacent to the project, the Corps has determined that the proposal may affect the Northern crested caracara. The Corps will request initiation of formal consultation with the Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act by separate letter.

Based on the presence or possible presence of suitable habitat, the Corps has made the preliminary determinations that the proposal may affect, but is not likely to adversely affect the Florida scrub-jay, and the Florida grasshopper sparrow. The Corps will request the Fish and Wildlife Service's concurrence with this determination pursuant to Section 7 of the Endangered Species Act.

ESSENTIAL FISH HABITAT (EFH): This notice initiates consultation with the National Marine Fisheries Service on EFH as required by the Magnuson-Stevens Fishery Conservation and Management Act 1996. The proposed project is located in the Peace River watershed which drains into the tidally influenced downstream reach of the Peace River and into Charlotte Harbor, an estuary of national significance. Our initial determination is that the proposed action would not have a substantial adverse impact on EFH or federally managed fisheries in the Gulf of Mexico. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

NOTE: This public notice is being issued based on information furnished by the applicant. This information has not been verified or evaluated to ensure compliance with laws and regulation governing the regulatory program. The jurisdictional line is under review but has not been verified by Corps personnel.

AUTHORIZATION FROM OTHER AGENCIES: Water Quality Certification is required from the Florida Department of Environmental Protection. At this time no FDEP application has been submitted, but applicant has advised that the FDEP application is anticipated to be submitted in the near future.

COMMENTS: This Public Notice is for the DeSoto Mine, one of the four proposed projects being considered in the Areawide Environmental Impact Statement (AEIS) to address phosphate mining in the Central Florida Phosphate District. Comments regarding the proposed DeSoto Mine should be submitted in writing to the District Engineer at the letterhead address or via email to: **pn.comment.desoto@usace.army.mil** within 30 days from the date of this notice. Comments may include, but are not limited to, topics such as: avoidance of impacts to Waters of the United States (WOUS), minimization of impacts to WOUS, and compensatory mitigation of impacts to WOUS, endangered species, etc.

The Corps will consider the information in the Draft AEIS, Final AEIS, comments on those documents, and comments on this public notice in the evaluation of the probable impact to the associated wetlands in order to determine whether to issue, modify, condition or deny permits related to mining activities within the areas described by the enclosed drawings. This will also be based on an analysis of the applicant's avoidance and minimization efforts for the project, as well as the compensatory mitigation proposed.

Project-specific comments for the other three proposed projects in the AEIS, Wingate East Mine, South Pasture Extension Mine, and Ona Mine, are also being solicited concurrently by separate public notices, which can be found on the Corps website at **<http://www.saj.usace.army.mil/Divisions/Regulatory/publicnotices.htm>**.

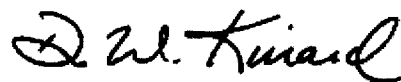
ADDITIONAL INFORMATION: In accordance with National Environmental Policy Act (NEPA) and applicable NEPA implementing regulations at 33 CFR Part 325 Appendix B, the U.S. Army Corps of Engineers, Jacksonville District (Corps) is preparing an Areawide Environmental Impact Statement (AEIS) to analyze the impacts and alternatives of four pending phosphate mine applications in the Central Florida Phosphate District (CFPD), including the subject application in this public notice. The AEIS enables the Corps to evaluate the direct and indirect impacts of those four currently proposed similar phosphate mining actions and their alternatives, and the cumulative impacts of past, present, and reasonably foreseeable actions including phosphate mining, with a more broad and holistic approach than would be possible in four separate EISs. The AEIS is also a more efficient approach to reviewing impacts and alternatives of the four proposed projects than conducting duplicative analyses in four separate EISs. Additional information about the AEIS can be found on the following web site: **<http://www.phosphateaeis.org>**.

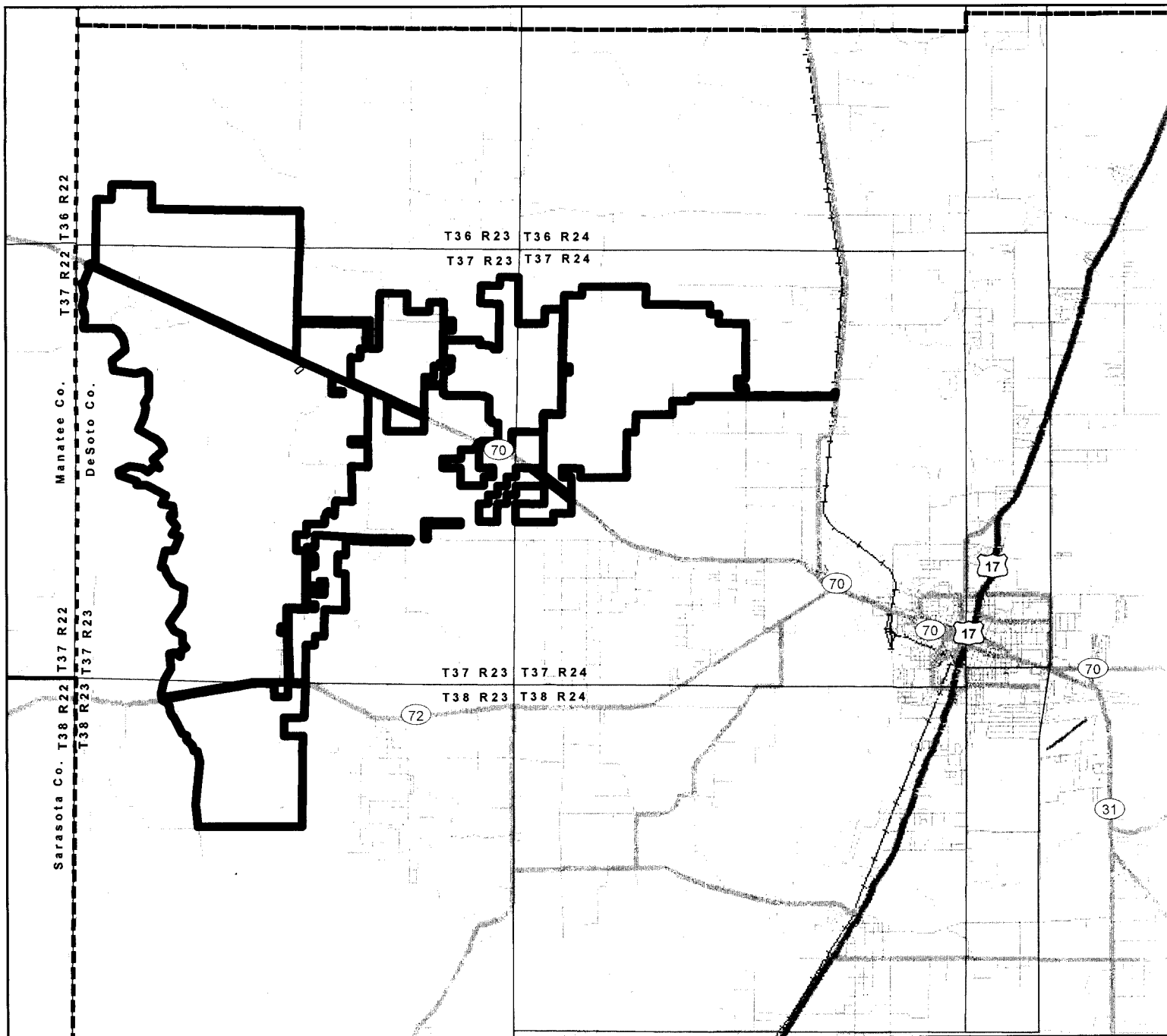
Please submit any comments regarding the AEIS, including the Draft AEIS, via e-mail to: **TeamAEIS@PhosphateAEIS.org**. Information about specific public comment periods for the AEIS pursuant to NEPA can be found on the project website listed above.

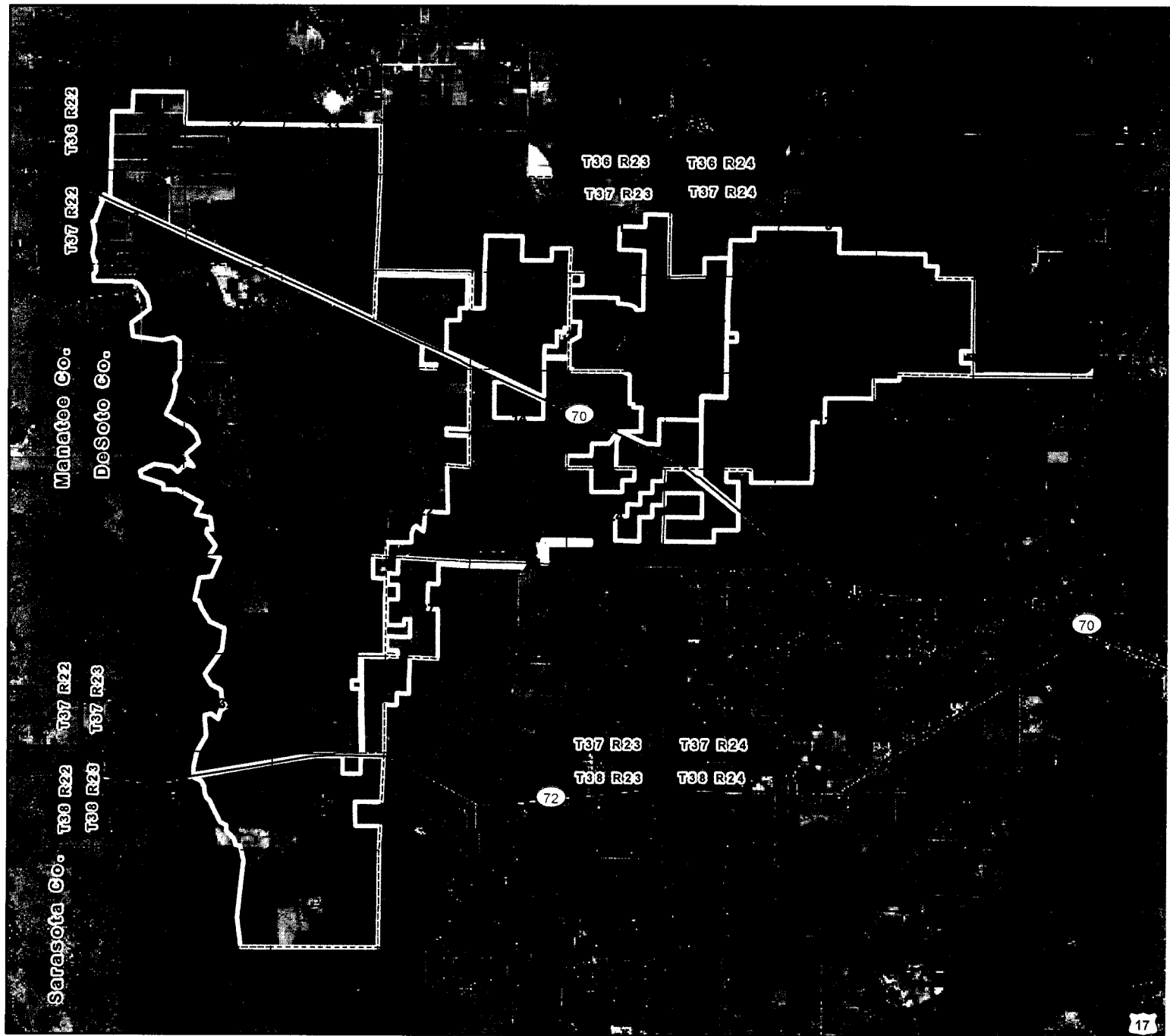
EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, esthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people. Evaluation of the impact of the activity on the public interest will also include application of the guidelines promulgated by the Administrator, the Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act of the criteria established under authority of Section 102(a) of the Marine Protection Research and Sanctuaries Act of 1972. A permit will be granted unless its issuance is found to be contrary to the public interest. The US Army Corps of Engineers (Corps) is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

COASTAL ZONE MANAGEMENT CONSISTENCY: In Florida, the State approval constitutes compliance with the approved Coastal Zone Management Plan. In Puerto Rico, a Coastal Zone Management Consistency Concurrence is required from the Puerto Rico Planning Board. In the Virgin Islands, the Department of Planning and Natural Resources permit constitutes compliance with the Coastal Zone Management Plan.

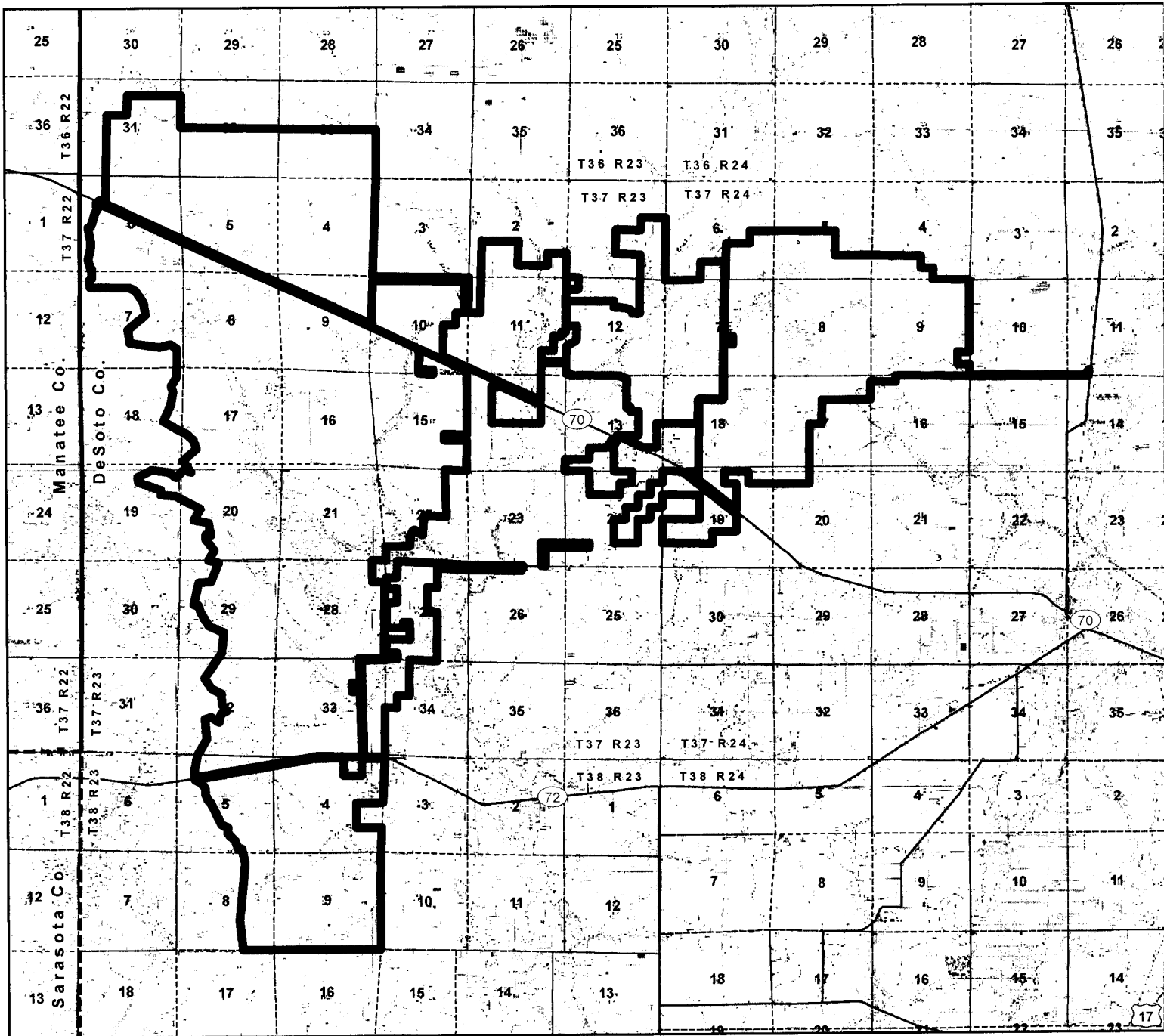
REQUEST FOR PUBLIC HEARING: Any person may request a public hearing. The request must be submitted in writing to the District Engineer within the designated comment period of the notice and must state the specific reasons for requesting the public hearing.

A handwritten signature in black ink, appearing to read "D. W. Kinnard". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

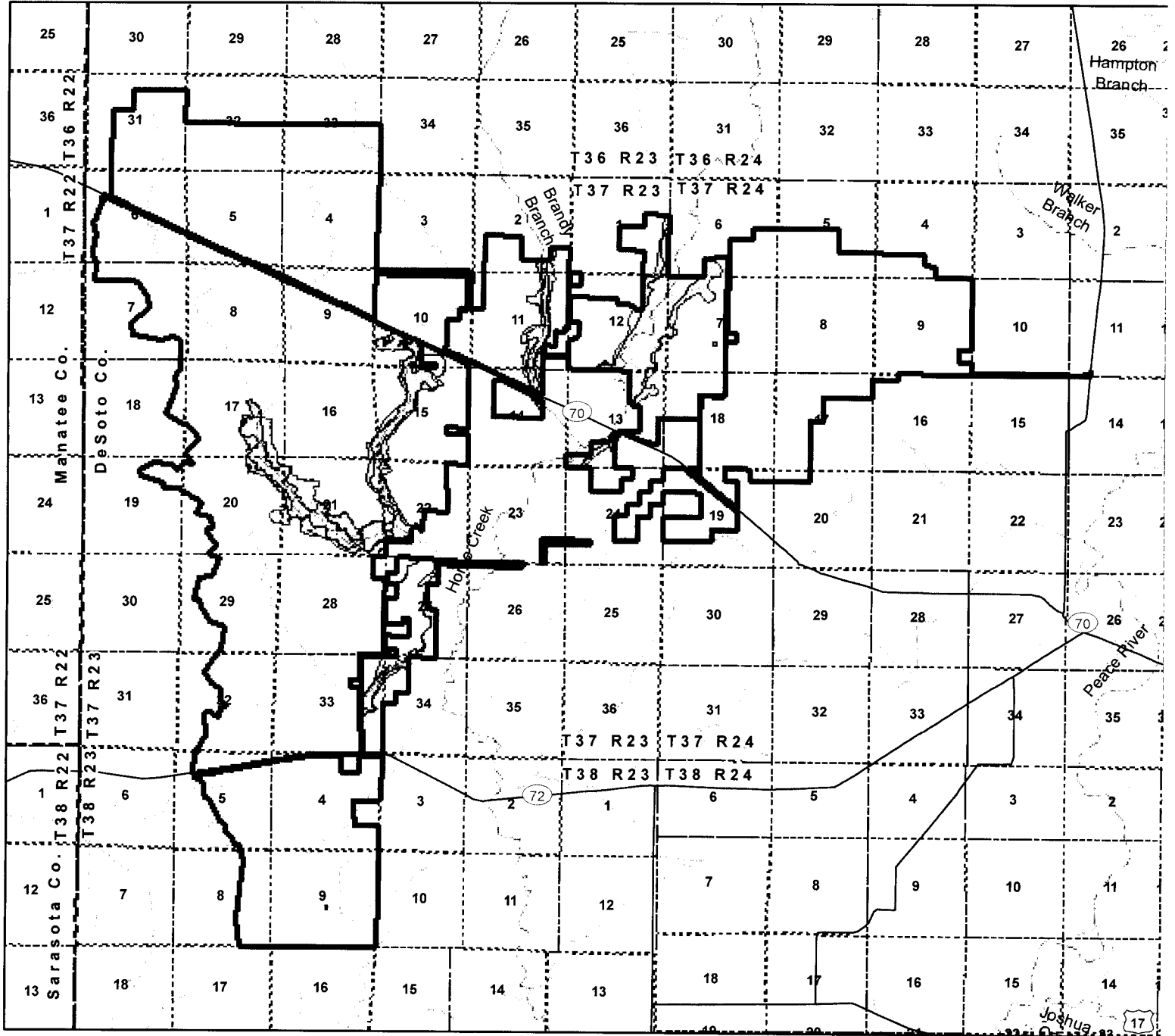




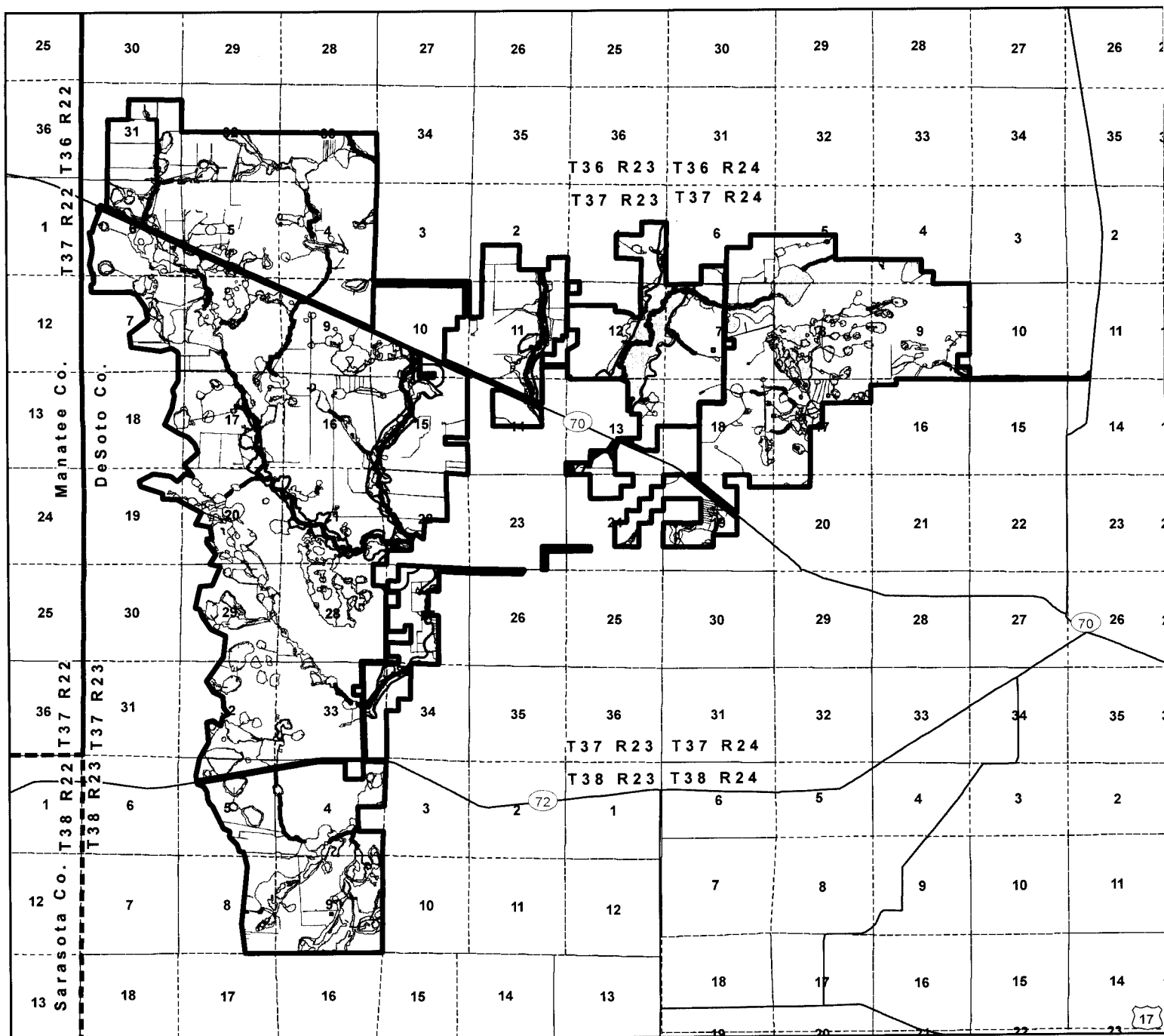
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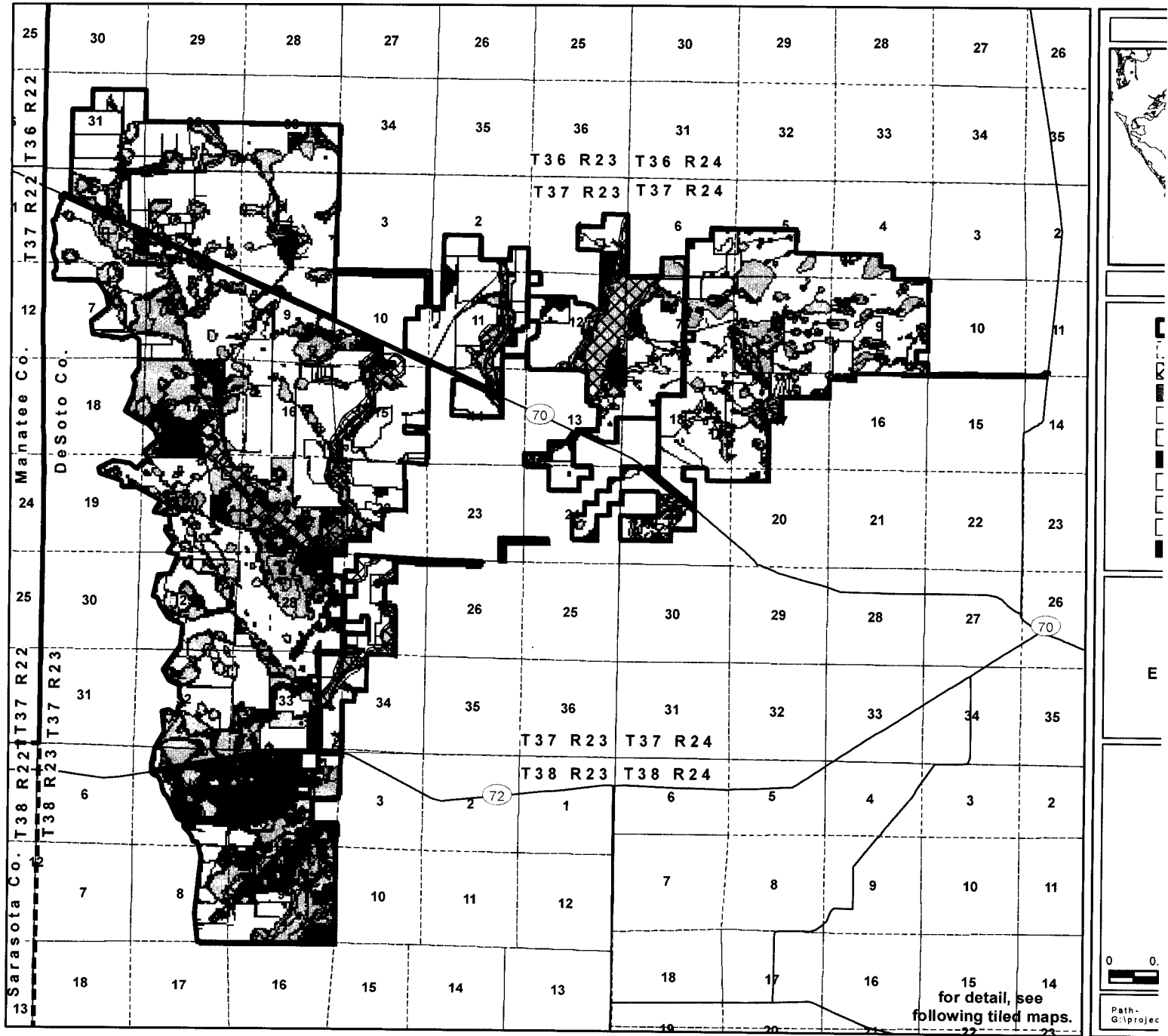
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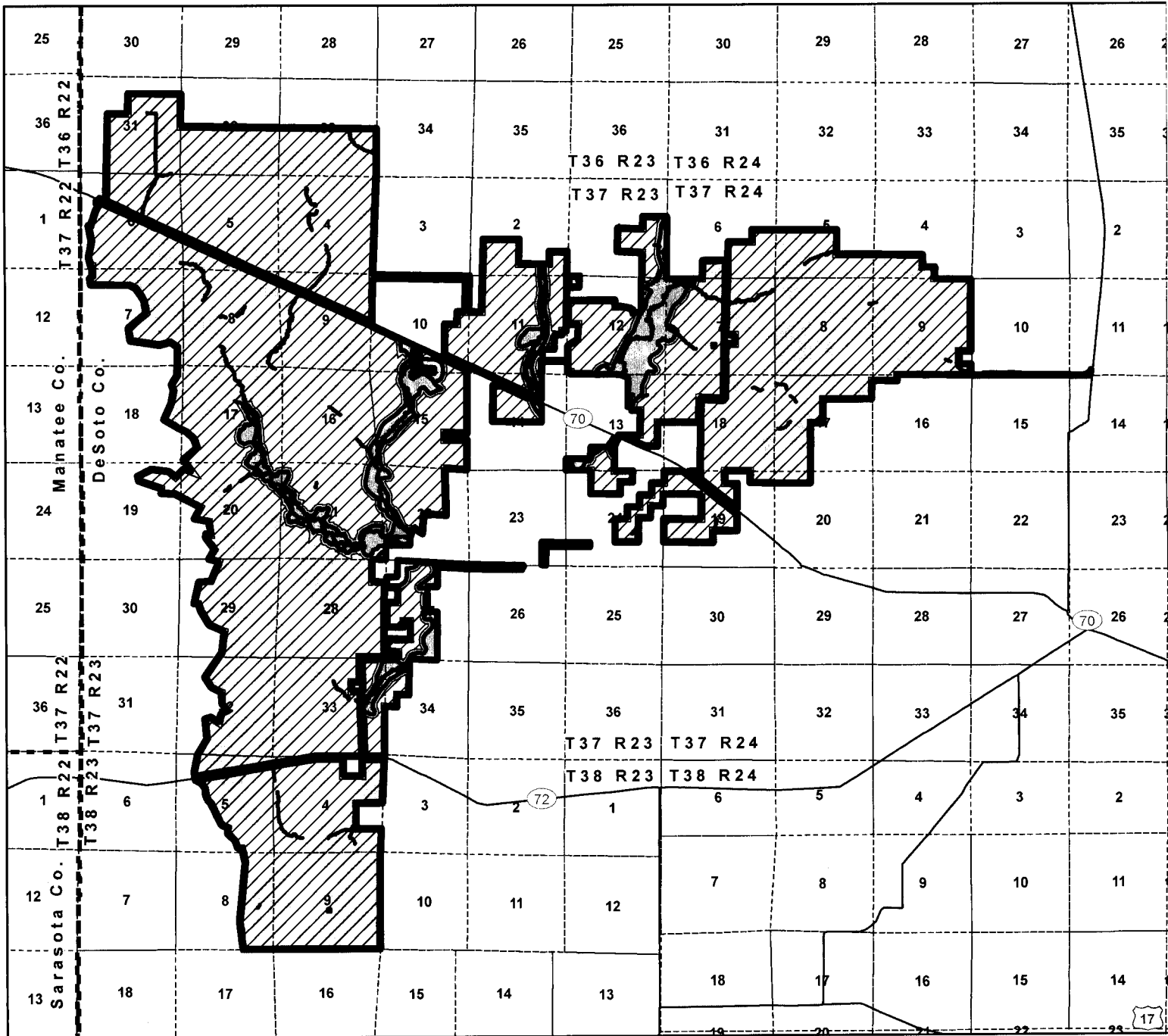
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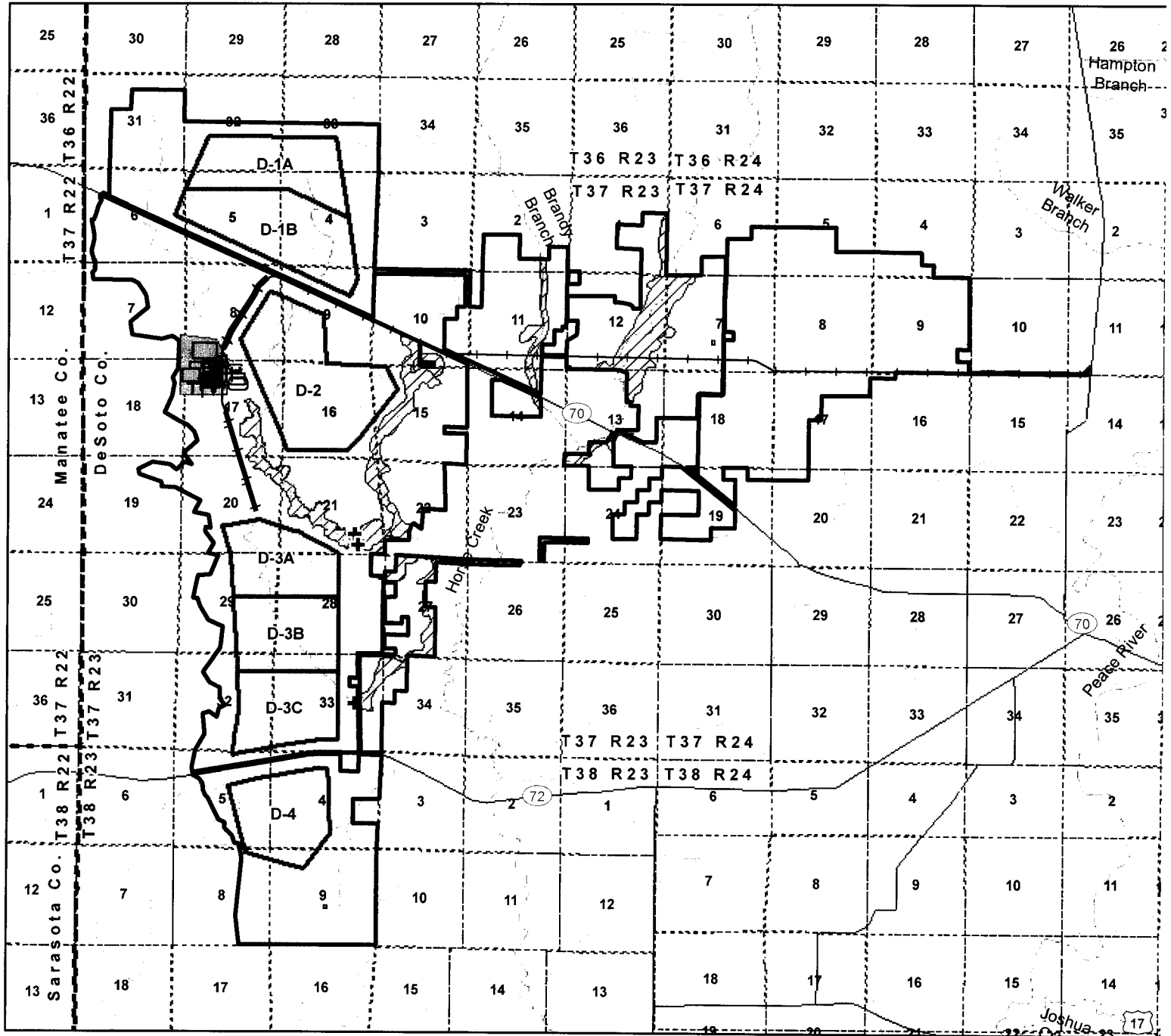
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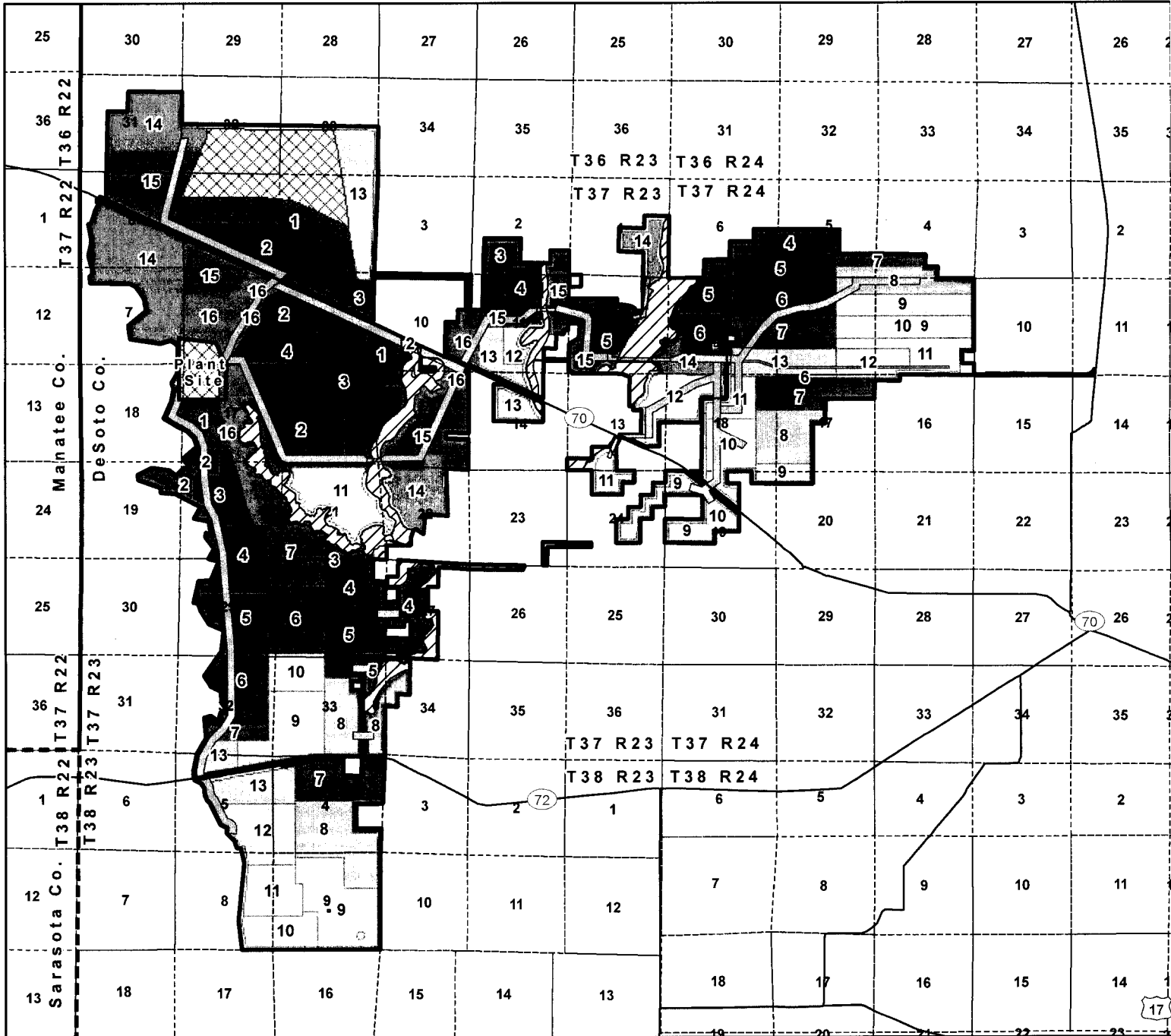
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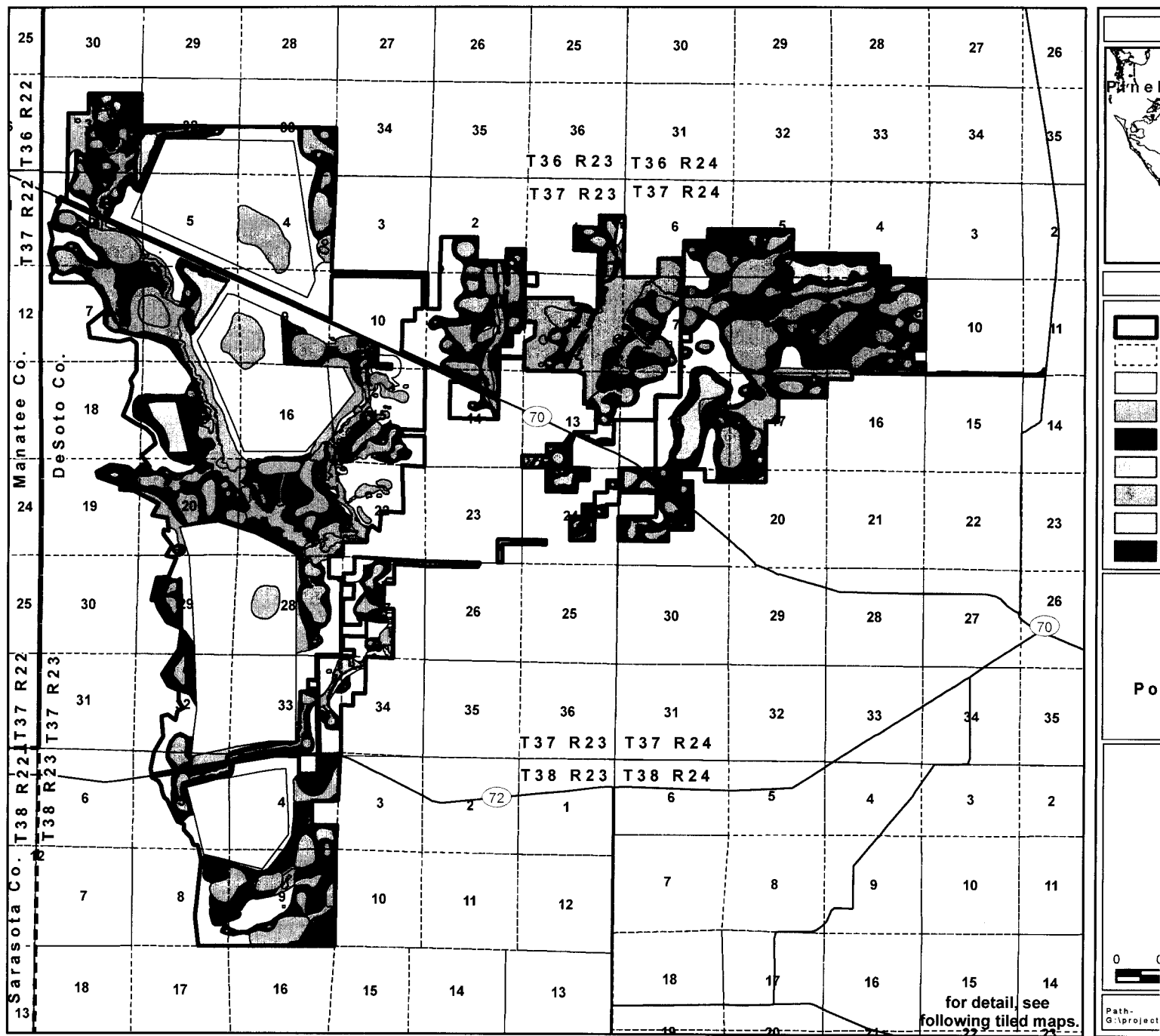
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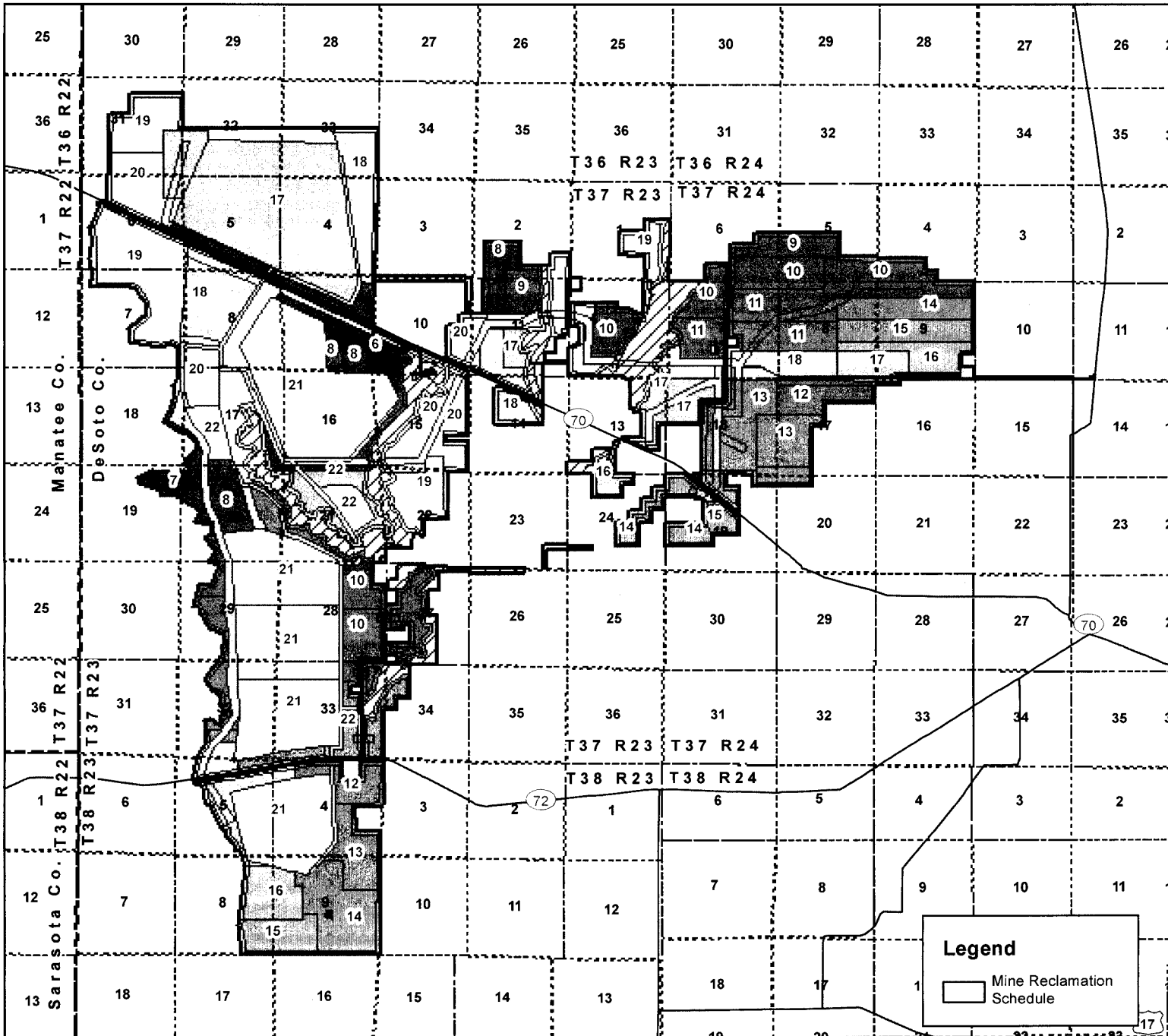
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MOSAIC FERTILIZER, LLC
SHEET 11 OF 12



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MOSAIC FERTILIZER, LLC

SHEET 12 OF 12

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Florida Department of Environmental Protection

Bureau of Mining and Minerals Regulation
2051 East Paul Dirac Drive
Tallahassee, Florida 32310-3760

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard, Jr.
Secretary

BUREAU OF MINING AND MINERALS REGULATION DEPARTMENT OF ENVIRONMENTAL PROTECTION STATE OF FLORIDA FINAL PERMIT

ENVIRONMENTAL RESOURCE PERMIT

PERMITTEE:

CF Industries, Inc.
c/o Mr. Nicholas Katzaras
Post Office Box 1549
Wauchula, Florida 33873

Permit Number 0294666-001

Date of Issue: June 22, 2012

Expiration of Construction Phase: June 22, 2045

County: Hardee

Project: South Pasture Extension Mine

This permit is issued under the authority of Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code, (F.A.C.). The activity is not exempt from the requirements to obtain an environmental resource permit. Pursuant to Operating Agreements executed between the Department of Environmental Protection (Department) and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity.

This permit constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act.

This permit also constitutes certification of compliance with water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1334. The proposed project does not require proprietary authorization for the use of sovereign submerged lands.

As staff to the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), the Department has reviewed the activity described above and has determined that the activity is not on submerged lands owned by the State of Florida. Therefore, your project is not subject to the requirements of Chapter 253, F.S.

The activities described herein may be conducted only in accordance with the terms, conditions, and attachments contained in this permit. The issuance of this permit does

not infer, guarantee, or imply that future permits or modifications will be granted by the Department.

A copy of this permit has been sent to the U.S. Army Corps of Engineers (USACE) for review. The USACE may require a separate permit. Failure to obtain any required federal permits prior to construction could subject you to enforcement action by that agency.

You are advised that authorizations or permits for these activities may be required by other federal, state, regional, or local entities including but not limited to local governments or municipalities. This permit does not relieve you from the requirements to obtain all other required permits or authorizations.

Pursuant to Section 2.2 of the Basis of Review for Environmental Resource Permit Applications (August 2, 2006) within the Southwest Florida Water Management District (Basis of Review), the proposed land use to be served by a surface water management system for which an Environmental Resource Permit is requested is not required to be consistent with the affected local government's comprehensive plan and/or existing zoning for the site. However, in the event that the permittee and the local government come to a resolution regarding comprehensive plans, existing zoning, or setback requirements that results in a mining and reclamation plan that differs from the plans detailed in this permit, the permittee shall seek and gain approval of all necessary modifications to this permit prior to conducting activities that deviate from the activities described herein.

The above named permittee is hereby authorized to construct the work shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof. **This permit is subject to the limits, conditions, and locations of work shown in the attached drawings, and is also subject to the general and specific conditions and monitoring requirements, which are a binding part of this permit.** You are advised to read and understand these conditions and drawings prior to beginning the authorized activities, and to ensure the work is conducted in conformance with all of the terms, conditions, and drawings herein. If you are using a contractor, the contractor also should read and understand these conditions and drawings prior to beginning any activity. Failure to comply with these conditions, including any mitigation requirements, shall be grounds for the Department to revoke the permit and authorizations and to take appropriate enforcement action.

Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and this permit.

PROJECT LOCATION:

The activities authorized by this permit are located within a 7,512.8-acre project site known as the CF Industries, Inc. South Pasture Extension Mine, which lies approximately two miles south of State Road (SR) 62 and approximately three miles west of the City of Wauchula in Hardee County, Florida. The project includes all or portions of Sections 1, 2, 3, 10, 11, and 12, Township 34 South, Range 23 East, and all or portions of Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10, Township 34 South, Range 24 East, and includes wetlands and other surface waters associated with Brushy Creek, Lettis Creek, and Troublesome Creek, all Class III waters.

PROJECT DESCRIPTION:

The permittee is authorized to conduct phosphate mining activities on 6,418.2 acres of uplands, wetlands and other surface waters within an approximately 7,512.8-acre area and to reclaim approximately 6,418.2 acres of uplands, wetlands and other surface waters following the completion of mining activities. The project includes disturbance of 1,702.9 acres of wetlands and other surface waters, including 930.7 acres of herbaceous wetlands, 491.9 acres of forested wetlands, 3.0 acres (approximately 21,342 linear feet) of natural streams, 3.3 acres (approximately 10,819 linear feet) of ditched natural streams, 10.2 acres of ditches through wetlands, 38.1 acres of upland cut ditches, 11.2 acres of cattle ponds, and 214.6 acres of non-wetland other surface waters. The 930.7 acres of herbaceous wetlands to be disturbed consist of 699.7 acres of freshwater marsh; 46.4 acres of low marsh grasses; 90.1 acres of shrub, brush, and vine; and 94.5 acres of wet prairie. The 491.9 acres of forested wetlands to be disturbed consist of 1.1 acres of bay swamp, 3.9 acres of gum swamp, 13.6 acres of inland ponds and sloughs, 274.4 acres of mixed wetland hardwood forest, 21.1 acres of willow swamp, 16.9 acres of hydric pine flatwoods, 44.9 acres of hydric pine savanna, 10.5 acres of slash pine swamp forest, and 105.5 acres of hardwood-conifer mixed wetland forest. The other surface waters to be disturbed consist of approximately 116.2 acres of herbaceous floodplain, 14.7 acres of shrubby floodplain, 83.2 acres of forested floodplain, 0.4 acres of disturbed lands within floodplain, 38.1 acres of upland cut ditches, 11.2 acres of cattle ponds, 10.2 acres of ditches through wetlands, 3.0 acres of natural streams, and 3.3 acres of ditched-natural streams. A total of 32,161 linear feet of streams or stream segments (approximately 21,342 linear feet of natural channels and 10,819 linear feet of modified natural channels) will be mined. This project also includes one temporary crossing of Brushy Creek for draglines, pipelines and utility corridors. This crossing will temporarily disturb approximately 526 linear feet of degraded stream channel.

Pursuant to the Basis of Review for Environmental Resource Permit Applications (August 2, 2006) within the Southwest Florida Water Management District as incorporated by Chapter 40D-4, F.A.C., and adopted by Chapter 62-330, F.A.C., disturbance of ditches and cattle ponds constructed entirely in uplands does not



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JUL 15 2013

Colonel Alan M. Dodd
District Engineer
Attn: Mr. Kevin O'Kane
Department of the Army
Jacksonville District Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-0019

Subject: CF Industries, Inc.
SAJ-1993-1396, South Pasture Extension

Dear Colonel Dodd:

The U.S. Environmental Protection Agency Region 4 received a copy of your letter dated June 13, 2013, to Mr. Nicholas Katzaras, CF Industries, Inc. (CFI). This letter requested CFI respond to the comments received from the June 1, 2012, Public Notice on the 404 permit referenced above and provide additional information needed by the Jacksonville District Corps of Engineers (District) to adequately review the project under the Clean Water Act (CWA) Section 404(b)(1) Guidelines (Guidelines). The EPA letters of July 30 and August 23, 2012, were enclosed and you restated our three concerns for this 404 permit: avoidance and minimization of impacts to aquatic resources, permit duration and compensatory mitigation.

In your letter, on pages 3 through 5, the District provides CFI with comments and requested further explanation on the steps taken to avoid and minimize impacts to waters of the U.S. as required by the CWA Guidelines. The purpose of this letter is to specifically address the individual permit referenced above under the EPA's authority in Section 404 of the CWA.

The EPA has reviewed the aquatic resource avoidance plan documented in CFI's South Pasture Extension (SPE) application, met with CFI representatives several times on- and off-site and discussed how they arrived at their final avoidance configuration: Option 4 - Proposed No-Mine (Section C-1 Environmental Narrative, Chapters 6.5 and 6.6; Figures EN-8, EN-9a and EN-9b). The EPA appreciates the transparency in this process and CFI's efforts to work with the local governments and non-governmental organizations to finalize an avoidance and minimization configuration for this project. The EPA used similar concepts in our deliberations and comments to the District that were ultimately used in the development of the FAEIS Chapter 5.4 "Proposed Mitigation Framework."

The EPA believes CFI's SPE mining plan "Option 4 - Proposed No-Mine" represents the company's progressive insight to address the CWA Guideline's avoidance and minimization mitigation sequencing for the important aquatic resources and CFI's commitment to proactively protect these resources. The CFI's Option 4 configuration satisfies our concerns regarding CWA Guidelines for avoidance and minimization mitigation for waters of the U.S. on the proposed SPE mine. We look forward to working with the District and CFI on the two remaining interests, permit duration and compensatory mitigation.

If you have any questions relating to this letter please feel free to contact me at (404) 562-8357 or Mr. Duncan Powell of my staff at (404) 562-9258.

Sincerely,

A handwritten signature in black ink, appearing to read 'A Stanley Meiburg'.

A. Stanley Meiburg
Acting Regional Administrator

cc: Ms. Angela Ryan
U.S. Army Corps of Engineers

Ms. Nancy Stoner
U.S. EPA Headquarters

Ms. Denise Keehner
U.S. EPA Headquarters

Mr. Kevin O'Kane
U.S. Army Corps of Engineers



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

7/30/2012

Donald W. Kinard
Chief, Regulatory Division
Jacksonville District
U.S. Army Corps of Engineers
P. O. Box 4970
Jacksonville, FL 32232-0019

Subject: EPA's Comments on the Draft Areawide Environmental Impact Statement (DAEIS) for the Central Florida Phosphate District, located in Charlotte, DeSoto, Hardee, Lee, Manatee, Polk, and Sarasota Counties, Florida
EIS Filed Date: 05/22/2012; CEQ Federal Register Date: 06/01/2012
CEQ Number: 20120165; ERP Number: COE-E67007-FL

Dear Mr. Kinard:

Pursuant to Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the Draft Areawide Environmental Impact Statement (DAEIS) on Phosphate Mining in the Central Florida Phosphate District (CFPD) developed by the U.S. Army Corps of Engineers (USACE), Jacksonville District, using a third-party contracting process as described in 40 CFR 1506.5. EPA understands that this NEPA process was "triggered" (initiated) because the USACE has received four applications for Department of the Army permits under Section 404 of the Clean Water Act (CWA) from Mosaic Fertilizer, LLC and CF Industries, Inc. (the Applicants) for four proposed phosphate mining projects in the CFPD (referred to locally as the "Bone Valley"). The specific projects currently being reviewed by the USACE (including their Department of the Army permit application numbers) are: Mosaic's Desoto Mine (SAJ-2011-01968), Mosaic's Ona Mine (SAJ-2010-03680), Mosaic's Wingate East extension of the Wingate Creek Mine (SAJ-2009-03221), and CF Industries' South Pasture Mine Extension (SAJ-1993-01395). EPA notes that the DAEIS appropriately focuses not only on the affected environment within the boundaries of the CFPD, an area of approximately 1.32 million acres (+/-2,100 square miles) in Hardee, Hillsborough, Manatee, Polk, Sarasota and Desoto counties, but also analyzes affected areas outside the CFPD, including the Peace, Myakka, Manatee, and Little Manatee River watersheds which are downstream of the CFPD, as well as affected portions of counties outside of the CFPD, including areas in Charlotte and Lee Counties.

EPA notes that the USACE has determined that "when viewed collectively, the separate proposed phosphate mining related projects have similarities that provide a basis for evaluating their environmental consequences together in one comprehensive environmental impact statement." As part of the permit review process, the USACE is evaluating the environmental effects of these similar actions. The primary Federal involvement associated with the proposed actions is the discharge of dredged or fill material into "Waters of the United States," including

jurisdictional wetlands. Issuance of federal authorizations for the proposed activities would constitute a "major federal action."

EPA previously received your letter (dated September 14, 2010) offering our agency, as well as the Florida Department of Environmental Protection (FDEP), an opportunity to become a "Cooperating Agency" to the USACE in the development of this AEIS for phosphate mining in the CFPD. Your request letter stated that this AEIS was intended to satisfy the requirements of the National Environmental Policy Act (NEPA) (Title 40 of the Code of Federal Regulations, part 1501.6), NEPA (42 U.S.C. 432 1 et seq.), Council for Environmental Quality (CEQ) Regulations (40 C.F.R. Parts 1500-1508), and the NEPA Implementation Procedures for the Regulatory Program (Appendix B to 33 C.F.R. Part 325). You also noted that the AEIS was proposed to fully consider a range of environmental, and socio-economic issues, with the USACE's responsibilities as the lead Federal agency for this AEIS defined in 40 CFR 1501.5, and EPA's responsibilities as Cooperating Agency outlined in 40 CFR 1501.6. EPA understands that this AEIS serves dual purposes, both as a Regulatory EIS for the four specific mine applications, as well as a holistic areawide mining environmental impact study. EPA accepted the USACE offer to serve as a Cooperating Agency in our letter sent to you on October 14, 2010, and we note that FDEP accepted on January 25, 2011. EPA also notes that over 20 municipal and county governments in the region have since agreed to become Participating Agencies to the USACE on the AEIS.

EPA supports the development of an AEIS for the CFPD, with a goal of bringing together local, state, federal, and industry partners involved in phosphate mining in the Bone Valley and developing a comprehensive EIS that fully analyzes the secondary and cumulative impacts of phosphate mining. EPA therefore concurred with the USACE retaining an EIS contractor (utilizing the 3rd Party NEPA process) to develop this AEIS, and we appreciate the USACE making development of this important AEIS a high priority. We worked with USACE on an aggressive schedule that yielded a comprehensive DAEIS in less than 18 months from the date of the publication of the Notice of Intent (NOI) in the Federal Register on February 18, 2011. The DAEIS appropriately evaluates the existing environmental conditions and potential future multi-media impacts associated with phosphate mining, and we have therefore involved a number of programs within our region and at EPA Headquarters to assist in this on-going process.

EPA offers the following specific comments and recommendations on relevant sections of the DAEIS:

1. DAEIS Cooperating and Participating Agencies

EPA notes that one of the primary goals of NEPA is to encourage meaningful public input and multi-agency involvement in the process of evaluating the environmental impacts of proposed federal actions, in this case the consideration of issuance of Department of the Army permits under Section 404 of the Clean Water Act (CWA). To this end, the President's Council on Environmental Quality (CEQ), which oversees NEPA nationally, has developed regulations that require agencies to make diligent efforts to involve the public and local, state, and other federal agencies in the NEPA process. The CEQ regulations call for agencies to actively identify

parties that might be interested in a proposed federal action, and to give notice to the public through a variety of media such as the Federal Register, local newspapers, or direct mailing.

EPA Recommendation: The USACE has actively identified parties that might be interested in a proposed federal action, and we commend the USACE for utilizing both Cooperating and Participating Agencies in the development of this AEIS. EPA recommends that the USACE continue working closely with both the Cooperating and Participating Agencies in completing the NEPA process.

2. DAEIS Purpose and Need

Pursuant to Title 33, Code of Federal Regulations (CFR), Part 325, Appendix B, the USACE appropriately considered the Applicants' statements of purpose and need for additional phosphate mining, but also considered the purpose and need from the public's perspective. The Applicants generally stated (for each of the proposed mines) that their purpose is "to maximize extraction of phosphate ore from the known mineral reserves located within a practicable pumping distance" from the various ore separation and beneficiation plants and "to maintain production capabilities of existing beneficiation facilities at optimum production levels." The Applicants also indicated their desire to "economically extend the life of mining facilities and beneficiation plants for as long as practicable by mining all commercially available phosphate reserves."

In order to guide its evaluation of the proposed project, both for purposes of NEPA and the AEIS, and the USACE's evaluation of the associated applications for permits under Section 404 of the CWA pursuant to the Section 404(b) (1) guidelines (40 CFR 230) and the public interest review, the USACE appropriately considered the purpose and need "in terms of a basic project purpose and an overall project purpose." The overall project purpose, as defined by the USACE, forms the basis for the USACE's evaluation of reasonable alternatives under NEPA. EPA notes the USACE's basic project purpose for each of the four similar actions under review in this AEIS is "to extract phosphate ore, and the overall project purpose is to extract phosphate ore from the mineral reserves located in the CFPD and to construct the associated infrastructure required to extract and process the phosphate ore at separation/beneficiation facilities recognizing that the ore extracted must be within a practicable distance to a new or existing beneficiation plant."

EPA concurs with the USACE's objectives of the AEIS to analyze the direct, indirect, and cumulative impacts/effects associated with the four similar permit applications for mining of phosphate within the CFPD, including those indirect and cumulative impacts that extend to areas outside of the CFPD. EPA also concurs with the USACE's goal to describe and assess the "no-action" alternative and other reasonable alternatives to the four similar proposed mining projects for which CWA permits are sought. Finally, EPA concurs with the USACE's "over-arching goal" of this AEIS "to inform agencies, other stakeholders, and the public of the impacts and alternatives to the four similar permit applications for phosphate mines."

EPA Recommendation: The Final AEIS (FAEIS) should be sufficiently thorough and detailed enough to fully support the USACE regulatory decisions regarding the four specific proposed

mine projects, as well having an additional capacity to inform USACE regulatory decisions regarding future phosphate mining permit applications.

3. DAEIS Process

EPA notes that, in accordance with Title 40, Code of Federal Regulations (40 CFR), Part 1501.7, the USACE complied with the requirement for an early and open NEPA process for determining the scope of issues to be addressed and for identifying significant issues related to the proposed action. As mentioned previously, the Notice of Intent (NOI) for the AEIS was published in the Federal Register on February 18, 2011. The formal scoping period ran from February 18, 2011 through April 30, 2011, and two public scoping meetings were held with a combined total of over 1000 persons in attendance: one on March 23, 2011, at The Lakeland Center in Lakeland, Florida, and one on March 25, 2011, at the Charlotte Harbor Event Center in Punta Gorda, Florida. The Cooperating Agencies, EPA and FDEP, both provided staff that spoke at these meetings along with USACE and 3rd Party Contractor speakers. The USACE received more than 5,000 comments contained in approximately 3,000 submissions from agencies, other stakeholder groups, and individual members of the public during the scoping period. EPA reviewed many of these comments, and noted that they covered a wide range of topics.

EPA notes that the USACE has received comments on the DAEIS that cover many of the same topics addressed during scoping. Among the most frequently mentioned are issues pertaining to the potential loss of wetlands and required mitigation, effects of phosphate mining on groundwater quality and levels (particularly the effects on the Floridan aquifer), adverse impacts to the Peace and Myakka Rivers and their tributaries, and maintaining and improving surface water quality in the Charlotte Harbor estuary. Also, many comments have been received concerning jobs and the regional economic importance of phosphate mining.

EPA Recommendation: The DAEIS notes that the USACE plans to respond to written comments received from the public during finalization of the FAEIS, which currently is projected to occur during the fall of 2012. EPA concurs, and we recommend that the FAEIS include a detailed “responsiveness summary” that presents and addresses all of the public and agency comments that have been submitted.

4. DAEIS Alternatives Analysis

EPA notes that USACE’s “NEPA implementing regulations” appropriately require consideration of a range of reasonable alternatives, including a “no action” alternative and the Applicants’ preferred alternatives. EPA notes that the process for identifying alternatives to be considered under this DAEIS, in addition to the “no action” and the Applicants’ proposed alternatives, applied two assumptions:

- The alternatives must be located over the CFPD geological formations where economically-mineable reserves of phosphate are likely to be located.

- The alternatives must either be located within 10 miles of an existing beneficiation plant that would be able to process the materials excavated at the alternative mine, or a new beneficiation plant would be required as an element of the alternative.

EPA notes that the DAEIS appropriately featured a screening of alternatives that included the using of publicly-available geographic information system (GIS) databases and geospatial analytical methods. EPA also concurs with the methodology used:

- The DAEIS included a preliminary screening of lands within the CFPD that included the identification of features that would preclude some lands from being considered as candidate areas for future mining (such as already mined lands, lands developed as urban areas, publicly owned lands designated for inclusion in parks or other preserved areas, etc).
- The DAEIS defined, using reasonable assumptions, a minimum parcel size and minimum overall mining areas that would be reasonable for "stand alone" mines.
- The DAEIS included a review of county and local ordinances that might preclude mine siting or mining operations.
- The DAEIS defined, using reasonable assumptions, the environmental characteristics which would likely increase the difficulty of mining implementation (primarily because of elevated risks of environmental impact).
- The DAEIS included a complete screening of candidate alternative locations by comparing environmental conditions, with the selection of a reasonable subset of the candidate alternatives for more detailed analysis.

EPA notes that the DAEIS appropriately considered a "no action" alternative that assumed no new mining projects would be approved during the 50-year planning horizon analyzed (through 2060). As required under NEPA, the DAEIS also considered the Applicants' Preferred Alternatives (Alternatives 2 through 5) as described in the respective permit applications, as well as all foreseeable mines (Alternatives 6 through 8). Finally, the DAEIS included an additional 17 areas that were identified and defined as "offsite alternatives" warranting more detailed analysis following the preliminary and secondary screening of candidate mining locations in the CFPD (Alternatives 9 to 25).

EPA Recommendation: In the Overall Project Purpose discussion, the FAEIS should include additional justification on the "practicable distance," which the DAEIS defines as the distance between the ore extraction area and a new or existing beneficiation plant. EPA notes that by allowing only a slightly greater distance than the 10-mile distance used for mine site planning in the DAEIS (such as a 12-mile distance), additional flexibility would be possible in mine plan configurations, including the potential for fewer beneficiation facilities required.

5. DAEIS Use of GIS for Ecological Analysis

As required by NEPA, the DAEIS analyzed ecologic resources that were considered "most likely to be affected" by the proposed mines or their alternatives. These resources included "herbaceous and forested wetlands, intermittent and perennial streams, and associated aquatic resource habitats." Analysis of potential direct mining impacts to these resources

1 appropriately utilized the latest geographic information system (GIS)-based tools developed by the State of Florida that provided a means for estimating the relative quality of wildlife habitats. These were the Integrated Wildlife Habitat Ranking System "IWHRS," developed by the Florida Fish and Wildlife Conservation Commission (FFWCC), and the Critical Lands and Waters Identification Project "CLIP" system, developed through a collaborative effort between the Florida Natural Areas Inventory (FNAI), the University of Florida, and the FFWCC. These GIS systems allow for rapid assessment of the ecological quality of a given parcel of land within the State of Florida, and this ecological screening of potential for impacts on natural resources was conducted for all of the 24 alternatives (not used for the "no action"). EPA notes that the IWHRS ranks wildlife habitat value on a scale from 0 to 10, while the CLIP looks at terrestrial and waters issues. The IWHRS uses a wide variety of landcover and wildlife data, while CLIP follows a combined approach of layering and assessing items. EPA also notes that the land use coverage used to support this AEIS was the 2009 SWFWMD "Florida Land Use, Cover, and Forms Classification System."

EPA Recommendation: EPA concurs with the use of the IWHRS and CLIP tools, but recognizes that they are composed of different data layers and use different datasets, and therefore could produce a substantially different outcomes for a given site. EPA recommends that the FAEIS include additional information on the relative merits/differences of both systems, such as how the Aggregated CLIP reflects a greater variety of ecological resources than the IWHRS, and how the Aggregated CLIP scores give more weight to the presence of surface waters, floodplains, and wetlands than does the IWHRS. EPA concurs with using both tools to provide "additional perspective for the AEIS review in its evaluation of the alternatives."

6. DAEIS Analysis of Wetlands and Mitigation

EPA notes that, in accordance with NEPA, the DAEIS appropriately evaluated direct and secondary impacts on wetlands systems and considered employment of buffers, setbacks, and greenways at perennial and intermittent streams. The DAEIS appropriately included a number of detailed summary tables of a range of ecological impacts that were identified for each alternative during the study. These include:

- Table ES-2, "Summary of Wetland and Stream Impacts of the Applicants' Proposed Alternatives"
- Table ES-3, "Wetland Land Uses at Alternatives 6, 7, and 8"
- Table ES-4, "Wetland Land Uses For Other Offsite Alternatives"
- Table ES-5, "Effects of Conceptual Buffers of 1,500, 3,000, and 6,000 Feet around Priority 1 and 2 Areas"
- Table ES-6, "Effects of Conceptual Buffers of 1,500, 3,000, and 6,000 Feet from Perennial Streams"
- Table ES-7, "Effects of Conceptual Buffers of 1,500, 3,000, and 6,000 Feet from Perennial and Intermittent Streams"
- Table ES-8, "Effects of Setback to Avoid Peace River "Greenway" System"
- Table ES-9, "Effects of Conceptual Buffers of 1,500, 3,000, and 6,000 Feet around High Value Wetlands Identified in the Applications"

- Table ES-10, "Effects of Conceptual Buffers from All Perennial Streams Identified in the Applications"
- Table ES-11, "Effects of Conceptual Buffers from All Perennial and Intermittent Streams Identified in the Applications"

Because of their cumulatively high degree of ecological function performed, including endangered and sensitive species habitat, groundwater recharge, water quantity provided to agricultural and municipal users, and water quality benefits to the downstream waters (including the Charlotte Harbor estuary), EPA considers many of the wetlands located in the proposed mining sites to be Aquatic Resources of National Importance (ARNI). Accordingly, this status as ARNI is indicated in the comment letter by EPA on the four USACE Public Notices that are the subject of this DAEIS that will be issued separately (by the Region 4 Wetlands, Coastal, & Oceans Branch) from this DAEIS comment letter.

EPA Recommendations: EPA concurs with the content in Chapter 5 of the AEIS that points out that wetland enhancement, restoration, establishment (creation), and/or preservation projects could serve, in appropriate combination of activities, to offset unavoidable wetland impacts for the proposed phosphate mining, when such mitigation projects are conducted in accordance with the USACE and EPA policies and procedures described in the joint 2008 Mitigation Rule. EPA notes that the DAEIS analyzed wetland mitigation and compensatory mitigation in a broad procedural sense, but we recommend additional, site-specific analyses be performed for the FAEIS as noted below. The ecological benefits of a mitigation project should compensate for the functional loss resulting from the permitted wetland impact. Compensatory mitigation activities may include, but are not limited to, onsite mitigation, offsite mitigation, offsite regional mitigation, and the purchase of mitigation credits from permitted mitigation banks. Specific comments are as follows.

- As mentioned previously in our comment on the Alternatives Analysis, the threshold of practicability is given in the DAEIS as 10-miles, and EPA recommends that use of this distance (versus use of a longer distance) be better justified in the FAEIS.
- For the proposed Mosaic Ona mine, the mine plan or configuration as proposed appears separated from the additional and contiguous Mosaic property to the south, also anticipated as a phosphate mine in the future and analyzed in the AEIS. EPA recommends that the Ona Mine site and the large Mosaic property to the south be planned concurrently, considering that a larger contiguous planning area would allow more options and opportunities for avoidance of wetland and other environmental impacts and compensatory mitigation.
- The DAEIS mentions a proposed permit duration of 45 years for the Ona mine, as well as similarly long times for the other mines. EPA notes that such a long duration can involve substantial risk for increases in environmental impacts over time as technical, biological, climatic, economic, and legal conditions will probably change over such a long period. In recognition of this high risk and uncertainty associated with a long permit duration, EPA recommends that a shorter permit duration be considered, with the entire proposed mine area potentially covered as sequential individual permits instead of a single long

permit. EPA also recommends permit conditions that require periodic interagency reviews of mining and mitigation activities at least every 5 years, as well as annual or semi-annual substantive reporting of mining and mitigation activities, with a corrective action plan or adaptive management plan included in the same reports when warranted.

- The project and mine configurations to be included in the FAEIS should demonstrate a greater degree of wetland impact avoidance and minimization, and should be substantively reviewed and discussed further in close consultation with EPA and the Applicants.
- Compensatory mitigation options, likely as mitigation banks, consistent with the USACE and EPA joint 2008 Mitigation Rule, should be reviewed and discussed further in the FAEIS. Conceptual off-site wetland restoration opportunities already have been identified in the Peace River watershed and discussed with EPA several times since mid 2011. Typical wetland mitigation opportunities for a substantial gain in wetland function could involve rehydration of drained wetlands on current agricultural lands, removal or alteration of levees or dikes to restore floodplain functions, blockage of drainage ditches, removal of historic fill material, and other field methods.
- The FAEIS should include better justification for the adopting the Florida UMAM wetland functional assessment method instead of the older and largely obsolete WRAP method. The reduced mitigation value of preserved, but not necessarily restored or enhanced, wetlands also should be determined early in the review and discussion process. In addition, the temporal loss of wetland functions should be incorporated into the overall compensatory mitigation planning, likely resulting in a mitigation project with more than a one-to-one final ratio to compensate for the temporal loss and uncertainty associated with successful wetland and stream restoration following surface mining operations. The FAEIS should discuss a new mitigation bank (or banks) that could be established even if the permit applicant(s) is/are the only bank customer. Under the Federal mitigation banking process, an independent organization should manage the mitigation bank(s) as a first priority, and a separate bank could serve the Myakka River and Peace River as distinct watersheds, in recognition that watersheds at that scale (e.g., 8-digit HUC codes or hydrologic units) are the broadest scale under the 2008 Mitigation Rule.

7. DAEIS Analysis of River Flows and Runoff

The DAEIS appropriately looked at impacts on critical portions of the seven major rivers that drain lands within the CFPD: Withlacoochee River, Hillsborough River, Alafia River, Little Manatee River, Manatee River, Myakka River, and the Peace River. The DAEIS notes that of the four currently proposed new mines, three are primarily located within the Peace River watershed and one is located in the uppermost portion of the Myakka River watershed, and many of the other alternatives are also in these two watersheds. The DAEIS identified future rainfall as the critical “driver” most impacting the water balance of any study area in Florida, as “it directly affects both the surface and groundwater resources of the AEIS study area.”

EPA notes that Applicants generally propose to develop mine footprints inside a ditch and berm system containing the mine's recirculation system. Thus, the mining area is to be designed to be "taken out of a given watershed's surface water contributions to the watershed's water budget except as allowed through discharges from the permitted National Pollutant Discharge Elimination System (NPDES) outfalls." As portions of the mine are reclaimed and ultimately released from within the recirculation system, the total mine capture area is proposed "to be returned to the pre-mining condition, and its impact on the watershed's water budget reduced over this time period." EPA recommends that the applicants coordinate permitting of these outfalls with EPA Region 4's Water Protection Division, Municipal and Industrial NPDES Section.

The DAEIS appropriately featured a detailed hydrologic analysis of potential decreases in surface water flows to downstream reaches of Horse Creek, the subwatershed in the Peace River that would be the most affected by development of the currently proposed Desoto, Ona, and South Pasture Extension Mines, and also the Pioneer foreseeable future mine project. Rainfall "capture" areas were estimated by evaluating the mine plans in terms of acreages scheduled to be mined over the life of each mine, and changes in land use and soil types were projected and used to calculate land use-based runoff coefficients which supported calculation of runoff quantities under annual average rainfall conditions at 10-year increments through 2060. The DAEIS quantified the differences between subwatershed runoff projections with and without the individual mines in place over the duration of the planning horizon. The DAEIS also notes that "because each mine's area is large, when viewed from a local standpoint, the expectation might be that the difference in runoff might be large, but when viewed from a watershed perspective, these areas are modest. The calculated differences in runoff delivered through the Horse Creek watershed were small."

The evaluations of the potential effects of two of the foreseeable future mine projects (the Pine Level/Keys and the Pioneer prospective mine projects) were also conducted using conceptual mine plans for these two alternatives that were generated based upon information and assumptions drawn from review of the mine plans for the Desoto, Ona, Wingate East, and South Pasture Extension permit applications.

EPA Recommendation: The FAEIS should include any additional hydrologic analyses that document potential decreases in surface water flows to downstream reaches of waterbodies that could be affected by development of the currently proposed mines or the foreseeable future mines.

8. DAEIS Analysis of Potential Impacts to the Floridan Aquifer

The DAEIS appropriately assessed the potential of the proposed mining to affect the water quality of surface waters draining off of, or downstream from, mined or reclaimed lands. The DAEIS also found that CFPD groundwater resources include three aquifers, two of which are most at risk of being influenced by phosphate mining: the Surficial Aquifer System and Floridan Aquifer System. The DAEIS found that in the southern areas of the CFPD, where the intermediate aquifer system is well developed, "the potential for water quality effects to penetrate to the Floridan is low." EPA is concerned, though, that this is not the case in the

northern portions of the CFPD, where a well defined intermediate confining unit/intermediate aquifer system is not present. The DAEIS found that "surficial aquifer communication with the upper Floridan aquifer can occur" in the northern portions of the CFPD.

Groundwater modeling using a model derived from SWFWMD's District Wide Regulatory Model (DWRM) was conducted to project the relative influence of the two proposed new mines (Desoto and Ona) on the Floridan Aquifer System. Modeling of the other two individual projects was not performed because those are extensions of existing mines; no new Floridan Aquifer water allocations are involved in their operations. Modeling of other alternatives' potential effects on the Floridan Aquifer was not performed, but effects are projected based on interpretation of the above evaluations.

EPA Recommendation: EPA Region 4 is currently reviewing the modeling efforts, and our Ground Water and Safe Drinking Water Enforcement Section will be providing technical input and assistance for the preparation of the FAEIS.

9. DAEIS Analysis of Discharge Monitoring History/Surface Water Quality

As part of the preparation of the DAEIS, a detailed review was appropriately conducted of historical mining discharge monitoring records in this area. These records indicated that surface water discharge from mines occurs but "not typically on a continuous basis." Surface water discharges from mines are intermittent, as mining companies maximize retention of rainfall for recirculation system use. Discharges generally occur when the system's capacity is exceeded, typically due to heavy rainfall and runoff. Mine discharge monitoring results "confirmed that selected parameters are elevated in mine discharges compared to ambient background levels" -- including elevated phosphorus, dissolved solids, conductivity, and sulfate. Additionally, a number of water body segments within the AEIS study area are included on the State's impaired waters list. However, when the selected outfalls, were averaged over the long term (five years), the discharges generally did not exceed relevant criteria levels, as summarized in DAEIS Table ES-12.

Biological monitoring downstream of active mine sites hasn't shown, "...a clear cause and effect relationships between mine discharges and biological responses..." EPA will continue our on-going assessment of the downstream effects of all mining activities even after the FAEIS is published. Evaluation of each downstream water body's compliance with the EPA-approved water quality standards is outlined in Florida's assessment methodology at Chapter 62-303, FAC. As required by the Clean Water Act (CWA), FDEP must report to EPA every two years regarding surface water body "use attainment" in its CWA 305(b) report and CWA 303(d) list of impaired waters. FDEP will identify to EPA any waterbodies which have a "water quality impairment" for the designated use. For each of the impaired waters, EPA will require that a Total Maximum Daily Load (TMDL) be developed for each particular pollutant that is not meeting the designated water quality standard. TMDL daily loads will be set as the pollutant limits for the water body, and will necessitate the creation of a "Basin Management Action Plans" (BMAPs) to lower any excessive pollutant loads and return the water body to a state of compliance with its designated use.

EPA Recommendation: EPA has promulgated, with future effective dates, numeric nutrient criteria for Florida's inland surface waters, and will propose numeric nutrient criteria for coastal waters in November of 2012. Site specific values in the surface water quality database indicate that these ranges may be exceeded at some sites. FDEP has also now adopted numeric nutrient criteria, including for marine waters such as Tampa Bay and Charlotte Harbor, and if approved by EPA, these will become the effective standards for CWA purposes for the waters to which they apply. The Final AEIS should be updated to reflect any future approvals of nutrient criteria.

10. DAEIS Economics Analysis

EPA's National Center for Environmental Economics (NCEE) conducted a thorough review of the economics analysis in the DAEIS and provided the following technical comments for consideration by the USACE. The NCEE reviewers note that the DAEIS examined the economic impacts from planned phosphate mining in the Central Florida area, and appropriately examined the predicted changes in economic activity in an 8 county region, including five counties in the CFPD and three adjacent counties. The NCEE reviewers also note that the DAEIS featured an analysis that reports changes in the value of output, labor income, and value added, as well as changes in employment, and utilizes the IMPLAN economic impact assessment software system for the majority of its calculations. EPA notes that the IMPLAN software "is currently used by hundreds of government agencies, colleges and universities, non-profit organizations, corporations, and business development and community planning organizations."

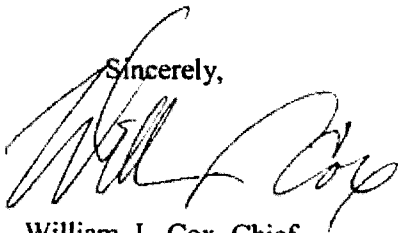
EPA Recommendations: Overall, the NCEE reviewers have suggested improvements for the FAEIS, including providing more documentation to support certain assumptions, better citation of sources, and consideration of the use of a higher discount rate. The reviewers noted that the discount rate has one of the largest impacts on the analysis, as a lower discount rate has the potential to inflate certain values. Additionally, the reviewers suggested that, in addition to the "with" and "without" mining alternatives, the FAEIS should consider scenarios which incorporate additional mitigation and conservation actions. Specific comments are as follows.

- The analysis uses a 2.0% discount rate as given as OMB Circular A-94, but this rate may not be appropriate for an analysis of phosphate mining. OMB's updated Circular A-4 recommends the use of both a 3% and 7% discount rate for benefit cost analysis. In order to appropriately calculate the net present value (NPV) of the economic impacts of phosphate mining, both 3% and 7%, presented alongside each other, is recommended.
- A 50-year time horizon was chosen for the analysis. More discussion should be included in the FAEIS on the use of a 50-year time horizon, particularly since there are clearly positive and negative economic impacts of these projects that carry beyond the 50-year time horizon. For instance, from years 41-50 there are still mining activities projected to be occurring in the Pioneer and Pine Levels/Key Extension mines. If reclamation is assumed to take 8 years (another assumption discussed below), then these activities will take place beyond the chosen horizon.
- The analysis calculates the projected property tax revenues to local governments. Instead of attempting to forecast these figures from available data, past data from the mining

- companies are used. The FAEIS should consider the inclusion of adjustments for future land uses, even though these projections play a large role in other parts of the DAEIS. The NCEE reviewers note that there is no temporal component to the property taxes (they are constant over all years), and these assumptions could significantly bias the projections.
- Even though the other areas of the DAEIS contain relatively detailed information on phosphate deposits at each mine, this analysis assumes an average value of 7.10 tonnes (metric tons) per acre for all mines. The FAEIS could easily be made more accurate for each mine based on existing information.
- Two assumptions in the DAEIS directly impact the results of the analysis and should be better supported by citations. First, the analysis assumes that reclamation is complete in 8 years, which should be better supported (for example, with peer reviewed literature). If not supported with peer reviewed literature, the analysis needs to use a better approach based on past data. The analysis also assumes that pasture is improved after reclamation. This also needs to be properly supported by data and citations.

We appreciate the opportunity to serve as a Cooperating Agency to USACE and to provide comments on this DAEIS. Based upon our review, EPA Region 4 has assigned this DAEIS a rating of EC-2, meaning we have requested additional information on several important areas, as explained above, including: 10-mile threshold of practicable pumping distance; permit durations; better wetlands impact avoidance and minimization strategies; compensatory mitigation; and improvements to some other areas of the document. Please include us in any notifications of future interagency meetings, and please forward a copy of the FAEIS when it becomes available. If you wish to discuss EPA's comments, please contact us at 404/562-9611 (mueller.heinz@epa.gov) or at 404/562-9330 (cox.williamL@epa.gov). Finally, as discussed previously, in accordance with our 404(q) process EPA will also be notifying the USACE by separate letter that the four mining projects may result in significant impacts to Aquatic Resources of National Importance (ARNIs).

Sincerely,



William L. Cox, Chief
Wetlands, Coastal, & Oceans Branch
Water Protection Division



for Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

cc:

John Fellows, AEIS Project Manager
U.S. Army Corps of Engineers
10117 Princess Palm Avenue, Suite 120
Tampa, FL 33610-8302



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

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AUG 12 2016

Colonel Jason A Kirk
District Engineer
Department of the Army
Jacksonville District Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207

SUBJECT: South Pasture Mine Extension SAJ-1993-01395
June 16, 2016, Public Notice

Dear Colonel Kirk:

The Environmental Protection Agency, Region 4, has received the above referenced public notice (PN) dated June 16, 2016, and the corresponding 45 page "Supplemental Environmental Assessment (EA), Draft Clean Water Act (CWA) Section 404(b)(1) Guidelines Analysis, and Draft Public Interest Review for Department of the Army Permit Application SAJ-1993-01395" (Supplemental EA). Under our agreed upon procedures, the EPA reviews these types of documents under the 1992 Memorandum of Agreement (MOA) between the EPA and the Department of the Army, Part IV, regarding Section 404(q) of the CWA (Section 404(q) MOA). This notice supplemented the previously issued PN dated June 1, 2012, for the South Pasture Mine Extension and attached draft Areawide Environmental Impact Statement (AEIS), also dated June 1, 2012. On July 30, 2012, and August 23, 2012, the EPA provided the U.S. Army Corps of Engineers (Corps) with letters consistent with Part IV, paragraphs 3(a) and 3(b) of the 1992 MOA (see enclosures). Under the Section 404(q) MOA, the next step would be a response from the Corps pursuant to Paragraph 3(c) of the MOA notifying the EPA how the Corps addressed the issues raised in the letters respectively dated July 30, 2012, and August 23, 2012. However, with the availability of the more recent information provided in the PN and Supplemental EA issued on June 16, 2016, and a draft compensatory mitigation plan (CMP) provided by the applicant on July 26, 2016, the EPA is providing additional comments as described below.

As expressed in the July 30, 2012, and August 23, 2012 Section 404(q) letters, the EPA's opinion was that the proposed discharges will have a substantial and unacceptable impact on aquatic resources of national importance (ARNI). The ARNIs and our three specific interests that were the basis for our opinion (i.e., avoidance of the ARNIs, the proposed compensatory mitigation, and the extended permit duration were identified in these letters). The Corps and the EPA have continued to work closely with the applicant to address these three issues. As noted in our letter dated July 15, 2013, the applicant had satisfied the EPA's concerns regarding the CWA Section 404(b)(1) Guidelines' avoidance requirements and also provided helpful information regarding how the project would minimize impacts with their Option 4 configuration.

The information provided in the PN dated June 16, 2016, and the Supplemental EA did not include a CMP. The applicant provided the EPA with a copy of their latest draft of their CMP on July 26, 2016, and met with the EPA on that day in Atlanta to discuss the contents of the CMP. Based on our review,

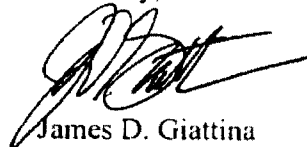
we are generally pleased with the contents of the draft CMP. However, the draft CMP does not include the specific success criteria that are very important for defining mitigation success. We understand the Corps plans to incorporate success criteria as specific conditions that will be included in the final permit for the South Pasture Mine Extension and provided to the EPA pursuant to paragraph (c) of the Section 404(q) MOA. Additionally, page 37 of the Supplemental EA describes an Adaptive Management Plan (AMP), and page 42 of the CMP also describes an AMP. We recommend the language describing the AMP could be strengthened with reference back to "success criteria" rather than the current use of "goals."

The concern about the duration of the permit, which was raised in the above referenced letters dated July 30, 2012, and August 23, 2012, remains an outstanding issue. The EPA now understands that the applicant will seek a 20 year permit and the final permit will reflect this. If this understanding is incorrect, please let us know. Consistent with other permits issued by the Corps with a long-term duration and the EPA's ongoing communication with the Corps on this issue, we continue to recommend that the permit include and be linked to the AMP with monitoring to provide check in points during permit implementation.

As noted above, the EPA understands that the Corps plans to send a response pursuant to paragraph 3(c) of the Section 404(q) MOA notifying the EPA how the Corps addressed the issues raised in EPA's letters dated July 30, 2012, and August 23, 2012. As the specific comments included in this letter are based on new information provided with respect to the concerns raised in the letters dated July 30, 2012, and August 23, 2012, the EPA believes it would be appropriate for the Corps to respond to these specific comments in its Section 404(q) paragraph 3(c) submittal.

The EPA appreciates all the hard work that has gotten us to this point. From our discussions with the Corps District staff we believe that solutions have been developed and are being finalized. We look forward to finishing the important work started in 2012 with you and the applicant to resolve these issues. If you have any questions, please call Mr. Duncan Powell of my staff at (404) 562-9258.

Sincerely,



James D. Giattina
Director
Water Protection Division

Enclosures (3)

1. Letter dated July 30, 2012, to Colonel Alan M. Dodd, District Engineer
2. Letter dated August 23, 2012, to Colonel Alan M. Dodd, District Engineer
3. Letter dated July 15, 2013, to Colonel Alan M. Dodd, District Engineer



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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JUL 30 2012

Colonel Alan M. Dodd
District Engineer
Department of the Army
Jacksonville District Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-0019

Subject: Four Individual Permit Public Notices
Mosaic Fertilizer LLC., Wingate East Mine, SAJ-2009-3221(IP-KDS)
Mosaic Fertilizer LLC., Ona Mine, SAJ-2011-1869(IP-JPF)
Mosaic Fertilizer LLC., Desoto Mine, SAJ-2011-1968(IP-MEP)
CF Industries, Inc., South Pasture Mine Extension SAJ-1993-1395(IP-ACR)

Dear Colonel Dodd:

The Environmental Protection Agency, Region 4, has reviewed the information found in each of the four public notices¹ (PNs) and supplemental material in the Draft Area-wide Environmental Impact Statement on Phosphate Mining in the Central Florida Phosphate District (AEIS)². The EPA is a cooperating agency with the U.S. Army Corps of Engineers, Jacksonville District (District) to develop an AEIS consistent with the requirements of the National Environmental Policy Act of 1969, as amended. The EPA has been involved in numerous meetings and discussions regarding the four referenced permits and the AEIS going back more than two years. As discussed below, the freshwater forested and herbaceous emergent wetlands and open waters that make up the creeks, rivers, sloughs, seeps, domes and depressions in the area covered by the AEIS are considered aquatic resources of national importance. We appreciate the opportunity to participate in the AEIS process and believe it has been beneficial in adding to the body of knowledge regarding phosphate mining in central Florida.

We have three specific interests about these proposed projects both collectively and individually. Some of these concerns are related to the draft status of the AEIS and outstanding comments the EPA has on the draft AEIS. As noted, the AEIS process has made great progress in identifying and reviewing information related to the mining process in this area of Florida and the EPA appreciates all the work that the District, stakeholders and the permit applicants have put into this process. However, certain issues remain. These are the requested permit durations, avoidance of waters of the U.S. considered to be ecologically significant, and the proposed compensatory mitigation. The applicants requested different durations for their various permits, as listed below. CF Industries, South Pasture Mine Expansion 20 years; Mosaic Fertilizer, Desoto Mine 22 years; Mosaic Fertilizer, Westgate East Mine 34 years and Mosaic Fertilizer, Ona Mine 45 years. Given the difficulty in projecting environmental impacts two decades or more into the future, it would appear to us to be prudent to award a permit for this length of time only if there is a clear ability to monitor progress on mitigation and adaptively

¹ http://www.saj.usace.army.mil/Divisions/Regulatory/publicnotices_Florida.html, as viewed between June 1, 2012 and July 27, 2012.

² http://www.phosphateaeis.org/doc_draft_aeis.html, as viewed between June 1, 2012 and July 27, 2012.

manage where appropriate. We believe there are opportunities to lessen this concern and we are prepared to discuss these during efforts to develop permit specific compensatory mitigation plans consistent with the Section 404(b)(1) Guidelines and the 2008 Mitigation Rule (33 C.F.R. Parts 230 and 332; 40 C.F.R. Part 230).

The PNs reference avoidance of some waters of the U.S. These modifications are excellent and reflect historic concerns voiced by the EPA and others related to the uncertainty and risk for created forested and herbaceous emergent aquatic habitats. The EPA believes that additional avoidance is warranted where mature bay swamps, heads and/or seepage slopes exist. There are specific recommendations that can address this interest once the District has approved the federal jurisdictional determinations.

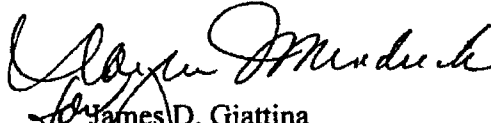
Additional interests relate to the conceptual nature of the proposed compensatory mitigation. The compensatory mitigation, as discussed in the PNs, proposes one acre created for every one acre to be impacted; and one linear foot of stream will be created for every stream linear foot impacted. These created habitats will be on-site and completed at various times in the future. We would like to see the applicants provisional compensatory mitigation consider ratios beyond an acre for acre/foot for foot due to temporal losses and risk associated with the mitigation time frames and establishing forested aquatic habitats. Therefore, off-site compensatory mitigation should play a larger role in the final plans to account for the temporal losses and uncertainty of successful restoration following phosphate mining. Finally, there is currently insufficient compensatory mitigation information to complete our review, as was noted in the draft AEIS³. The draft AEIS states that the initial permit applications only provided preliminary information because there are no approved federal jurisdictional determinations on the four mine sites and as of the date of the PNs, the applicants had yet to submit federal Section 404 compensatory mitigation plans. We would welcome a collaborative effort with the District and the applicants to address these questions.

As summarized above, the information and comments being collected for the AEIS on Phosphate Mining in the Central Florida Phosphate District will be vital for our review and providing project specific comments and recommendations. Therefore, based on the information available, the EPA believes that the projects as currently proposed may not comply with the Section 404(b)(1) Guidelines and may have substantial and unacceptable adverse impacts on aquatic resources of national importance. This letter follows the field-level procedures outlined in the August 1992 Memorandum of Agreement between the EPA and the Department of the Army, Part IV, paragraph 3(a) regarding Section 404(q) of the Clean Water Act.

³ http://www.phosphateaeis.org/doc_draft_aeis.html, Chapter 5.6 Mitigation Plans for Currently Proposed Mines, page 5-18 as viewed between June 1, 2012 and July 27, 2012.

I want to thank you and your staff for your cooperation and willingness to address our issues. We look forward to working closely with you and the applicant to resolve the concerns outlined above. If you have any questions, please call me at (404) 562-9345 or Duncan Powell of my staff at (404) 562-9258.

Sincerely,



James D. Giattina
Director
Water Protection Division

cc: Fish and Wildlife Service, Vero Beach, Florida (Begazio)
National Marine Fisheries Service, St. Petersburg, Florida (Sramek)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

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AUG 23 2012

Colonel Alan M. Dodd
District Engineer
Department of the Army
Jacksonville District Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-0019

Subject: Four Individual Permit Public Notices

Mosaic Fertilizer LLC., Wingate East Mine, SAJ-2009-3221(IP-KDS)
Mosaic Fertilizer LLC., Ota Mine, SAJ-2011-1869(IP-JPF)
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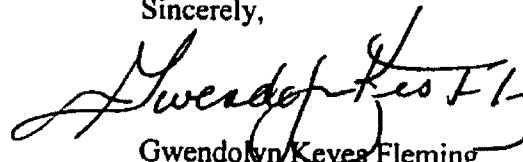
Dear Colonel Dodd:

This letter follows our previous letter dated July 30, 2012 (enclosed) and the field-level procedures outlined in the August 1992 Memorandum of Agreement between the U.S. Environmental Protection Agency and the Department of the Army, Part IV, paragraph 3(b), regarding Section 404(q) of the Clean Water Act. Our opinion is that the discharges will have a substantial and unacceptable impact on aquatic resources of national importance (ARNI), as currently proposed. The ARNIs and our three specific interests (requested permit durations, avoidance of the ARNIs and the proposed compensatory mitigation) that are the basis of our opinion, were stated in our July 30, 2012, letter and are still currently being discussed among the agencies and the companies.

The EPA is confident that these interests will be addressed in the U.S. Army Corps of Engineers Jacksonville District's permitting process and the processes to finalize the Area-wide Environmental Impact Statement on Phosphate Mining in the Central Florida Phosphate District. We believe there are solutions to our concerns and see positive steps being taken to address them.

I want to thank you and your staff for your cooperation. We look forward to working with you and the applicants to resolve our concerns. If you have any questions, please call Mr. Duncan Powell of my staff at (404) 562-9258.

Sincerely,



Gwendolyn Keyes Fleming
Regional Administrator

Enclosure

cc: Mr. Alfredo Begazo, Fish and Wildlife Service
Mr. Mark Sramek, National Marine Fisheries Service

Demonstration of Successful Land Reclamation and Habitat Enhancement

CF Industries, Inc.



Document Information

Prepared for US Army Corps of Engineers
Project Name South Pasture Extension
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Prepared for:



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of Engineers®**

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Appendix C	South Pasture Mine Reclamation Wetland Groundwater Hydrology Summary Package	Follows Text

1 Introduction

CF Industries, Inc. (CF) owns and operates phosphate mining and beneficiation facilities in northwest Hardee County, Florida. Mining and beneficiation operations were initiated in 1978 at the North Pasture Mine, which continued until the mining operation was relocated in 1993 to the current location, referred to as the CF Industries Hardee Phosphate Complex, or South Pasture mine. All mining and land reclamation activities at the North Pasture Mine have been completed, while mining and land reclamation on the South Pasture are ongoing. CF is currently seeking regulatory approvals to extend its mining footprint adjacent to the South Pasture Mine into an area referred to as the South Pasture Extension.

In addition to the two mines, CF owns and operates a phosphate fertilizer manufacturing plant in northeast Hillsborough County, Florida (CF Industries Plant City Phosphate Complex). As a part of the approved expansion of the Plant City facility, CF initiated a large-scale ecological restoration plan in 1997 that has restored previously altered upland and wetland habitats.

This document provides a summary overview of CF's nearly 30 years of successful reclamation and enhancement efforts to demonstrate CF's legacy of creating functional ecological communities. The information provided in this document has been compiled through review of permitting submittals, monitoring reports, published Florida Industrial and Phosphate Research Institute (FIPR) studies, and direct field observations and data collection.

CF's strategy has long been to establish montages of wildlife habitat along combinations of preserved and reclaimed stream corridors and their adjacent uplands, linking these systems geographically and hydrologically to the even larger habitat networks formed by regional stream networks such as Payne Creek and Horse Creek, major tributaries to the Peace River in proximity to CF's mining operations. This approach is consistent with the Florida Department of Environmental Protection (FDEP) Integrated Habitat Network and the Charlotte harbor National Estuary Program (CHNEP) Comprehensive Management Plan objectives for the Peace River watershed. Some of the company's restoration efforts also include habitat corridor restoration efforts in the Hillsborough River watershed, consistent with the goals of the Upper Hillsborough River Greenway Task Force. To date, CF has committed over 11,000 acres of reclaimed and natural habitat on its Florida properties to permanent conservation easements, which further reinforce CF's commitment to excellence in the development of its restoration plans and diligence in its implementation and stewardship.

2 Habitat Reclamation and Enhancement

Reclaimed and enhanced wetland and upland habitats are designed by CF to meet or exceed the requirements of local, state, and federal reclamation and mitigation requirements, and those requirements have been steadily evolving toward more refined performance and success criteria over time. To the extent practicable, planned systems are analyzed, designed, and modeled to approximate the pre-mining, unaltered¹ conditions of each habitat type (i.e., similar plant species, topography, water depth, and drainage patterns), with target communities based on extensive field mapping and vegetative descriptions that detail the site-specific conditions of the existing, on-site systems. To further improve the reclamation process and ensure that reclamation objectives are achieved, an adaptive management approach is undertaken to identify deficiencies and implement corrective actions in a timely manner.

¹ Often the pre-mining landscape has been previously altered through agriculture, drainage modification, or other anthropogenic activities.

In the following sections, the current state of reclamation and enhancement activities performed by CF to date is summarized according to type of reclamation. As indicated above, the data presented were obtained from a combination of direct observation, existing reports and/or site inspections.

2.1 Herbaceous and Forested Wetland Reclamation

Despite some of the wetland complexes having been created during past mitigation regulatory frameworks (with less evolved reclamation requirements) and others being constructed more recently without the opportunity to reach full maturity, a high level of success has been achieved throughout many created wetland systems. An effective tool for evaluating wetland function is the Uniform Mitigation Assessment Method (UMAM). This method is used to calculate the amount of required mitigation necessary to offset wetland impacts. The Florida Department of Environmental Protection (FDEP) recently used UMAM in a targeted study assessing the ecological value of phosphate mine permittee-responsible onsite mitigation previously released from reclamation requirements (unpublished evaluation). Although wetlands discussed in this section have yet to achieve regulatory release criteria, primarily because they are still being actively monitored and maintained, they currently exhibit high functional value, thus providing appropriate, effective mitigation for mining impacts. The average UMAM score of CF's reclamation wetlands is 0.63 (In comparison, the average UMAM score of wetlands proposed to be mined on South Pasture Extension is 0.52) and includes forested and herbaceous wetlands that were constructed and revegetated between 1991 and 2011. The highest scores are attributed to herbaceous wetlands, which generally mature faster and in which the latest reclamation technology was applied, as well as some of the forested systems that have matured over the last 20 years, which even though constructed with less evolved methods, still demonstrate high functionality. The latest technology proposed in the current application for CF's SPE is expected to achieve equal or better results in the same or less time than demonstrated herein, based on lessons learned as a result of the past reclamation work and the application of the latest reclamation methods. Maps of each complex illustrating the land use and wetland ID are included for reference (see Land Use Map Package- Appendix A, and Wetland Map Package – Appendix B, respectively).

2.1.1 Hickey Branch Complex

The reclaimed Hickey Branch system is one of the oldest examples of CF reclamation success. The wetlands (R-7 and R-10) within the Hickey Branch drainage area were constructed beginning in 1991 with sand tailings backfill and received muck application within the wetland footprint. The complex consists of deep and shallow marsh (FLUCFCS 641), a mixed hardwood forest (FLUCFCS 617), and a lake with littoral shelf communities (FLUCFCS 524) surrounded by an upland buffer (See Appendix A). Management activities included maintenance herbicide within the wetlands and uplands and supplemental plantings as needed to achieve required density and the area's eventual reclamation release. The UMAM scores in this complex range from 0.70 (21-year old herbaceous/open water system) to 0.77 (21-year old forested systems) with an overall wetland UMAM average score of 0.73, as shown in the table below. It should be noted that the FDEP also conducted a UMAM evaluation of these areas, which resulted in similar scores (unpublished evaluation).

Table 1 Hickey Branch Wetland Reclamation Summary Table

Wetland ID	Time Since Revegetation	Total UMAM Score
LRU-R-7		
Hickey Branch 524	21 years	0.70
Hickey Branch 617	21 years	0.77
Hickey Branch 641	21 years	0.73
Average		0.73
Total Average for Hickey Branch		0.73

Formal wildlife surveys were conducted at several locations within the Hickey Branch complex as part of the FIPR Wildlife Habitat and Wildlife Utilization of Phosphate-Mined Lands study (Durbin et al. 2008). The results of the two-year study documented presence of a combined total average of 34 species of vertebrates, representing all five classes of vertebrates, within the Hickey Branch complex, including ten amphibians and over 50 species of birds. Many species of fish, reptiles and mammals were also documented, providing evidence that these restored reclamation systems are used by a variety of species. A nesting colony consisting of several wading bird species has recently been documented as well.



Hickey Branch, R-7 - Forested Wetland/Herbaceous Marsh Complex, 2012



Hickey Branch, R-10 - Wading Bird Colony

2.1.2 Doe Branch Complex:

The wetlands that are isolated or connected within the Doe Branch drainage area were constructed between 1998-2007 with sand tailings backfill and received muck application within the wetland footprint. Consistent with the South Pasture Mine permit, this area was used briefly for additional operational stormwater storage in 2004, which stressed some of the wetland vegetation and necessitated some replanting. The complex consists of deep and shallow marsh (FLUCFCS 641), wet prairie (FLUCFCS 643), and mixed hardwood forest (FLUCFCS 617) communities surrounded by an upland buffer and adjacent preserve to the North (See Appendix A). One of the shallow wetland's hydroperiod was established by installation of a thin clay lens in the soil profile, and one forested wetland was contoured to have hummocks. The uplands were topsoiled, spaded with mature upland trees, and used as a permitted gopher tortoise relocation site. Management activities include prescribed burning in the uplands, maintenance herbicide within the wetlands and uplands, and supplemental plantings as needed to achieve required density. The UAM scores in this complex range from 0.47 (seven-year old herbaceous system undergoing adaptive management) to 0.67 (several four-year old and ten-year old herbaceous systems), with an overall average UAM score of 0.61, as shown in the table below. A summary of the permit success criteria and current condition of the Doe Branch reclamation sites is presented in Table 3.

Table 2 Doe Branch Wetland Reclamation Summary Table

Wetland ID	Time Since Revegetation	Total UAM Score
DB-2		
DB-TR-R1	10 years	0.57
Average		0.57
DB-3		
DB-HW-R4	10 years	0.67
DB-HW-R5	10 years	0.67
Average		0.67
DB-4		
DB-IS-R74A	7 years	0.63
DB-IS-R74B	7 years	0.63
DB-IS-R74C	7 years	0.47
Average		0.58
DB-5		
DB-IS-R8	4 years	0.67
DB-IS-R9	4 years	0.67
DB-HW-R3	4 years	0.60
Average		0.64
Total Averages for BC		0.61

The DB-HW-R4 and DB-HW-R3 sites were designed to be forested, depressional headwater swamps, draining across short outlets to a preserved in-line swamp depression to the north. Over two years of hydrologic monitoring, upland wells exhibited a range of fluctuation that is within regional norms for natural ground in flatwoods and mesic-hammocks, and indicated positive lateral groundwater flow gradients to the reclaimed and preserved wetlands as designed. Fluctuations within the wetland

piezometers also reflected natural norms during this same time period. The DB-IS-74 West and East sites form a headwater chain of wetlands designed to drain to a reclaimed strand (DB-TR-R1). Both sites show groundwater table fluctuations and gradients in accordance with design direction and land use objectives. A more detailed discussion of the groundwater hydrology for this system is presented in Appendix C.

Formal wildlife surveys were conducted at several locations within the Doe Branch complex as part of the FIPR Wildlife Habitat and Wildlife Utilization of Phosphate-Mined Lands cited above. These surveys were conducted over a two year period (2004 and 2005) and included various standard methods designed to capture and/or observe specific guilds of wildlife. The results of the two-year study documented that a combined total average of 37 species, representing all five classes of vertebrates, was observed within the Doe Branch complex. Species included nine amphibians, some of which are commonly used as barometers of ecosystem health because of their specific habitat needs and a biphasic life cycle that requires intact uplands and wetlands for survival and reproduction (Guzy et. al 2012). In addition, over 75 species of birds were observed within the Doe Branch complex. Several species of fish, reptiles and mammals were also documented in this study, providing evidence that these restored reclamation systems are used by a variety of species.

Table 3 Doe Branch Permit Success Criteria Status Based on 2011 Monitoring Reports

DB-TR-R1		
Permit Success Criteria		
Macroinvertebrate and fish communities must have 75 percent of the species diversity and richness of a reference wetland of that vegetation community. All functional feeding guilds found within a reference of the appropriate type are present	Past monitoring has documented over 76 macroinvertebrate species representing 7 Classes, 17 Orders, and 32 Families, and 4 fish species	Past monitoring has documented over 76 macroinvertebrate species representing 7 Classes, 17 Orders, and 25 Families, and 4 fish species
	Note: Once reclaimed forested canopy is clearly trending towards success, a	
Cover by native wetland species listed in Rule 62-340.450, F.A.C., in the herbaceous and shrub layer of the forested wetland and in herbaceous wetlands shall be at least 80 percent. The wetland may be released if cover is within the range of cover values reported for the reference wetland of that community type. Open water areas shall not exceed 15 percent of the total acreage of the restored wetland and desirable ground cover plant species shall be reproducing naturally.	2011 Avg. Percent Covers: Native wetland herbaceous cover: 84 % Native wetland shrub cover: 13.7% Open Water/Bare Ground 13% Average Water Depth 0.75" The majority of native wetland species have been observed in fruit or flower	2011 Avg. Percent Covers: Native wetland herbaceous cover: 84 % Native wetland shrub cover: 13.7% Open Water/Bare Ground 13% Average Water Depth 0.75" The majority of native wetland species have been observed in fruit or flower
Cover nuisance species, including, but not limited to cattail and primrose willow shall be limited to less than 10 percent of the total wetland area. Invasive exotic vegetation shall be limited to less than 0.1 percent of the total wetland area.	2011 Avg. Percent Covers: Non-native nuisance cover: 7% Invasive exotic cover: 1%	2011 Avg. Percent Covers: Non-native nuisance cover: 7% Invasive exotic cover: 0%
The wetland shall have a similarity of 0.6 for the forest and herbaceous components (as determined using a Morisita's Index based on the reference wetland for that vegetation community type).	To be determined once canopy matures	To be determined once canopy matures
Species richness, for both the herbaceous and forested vegetation, shall be equivalent to 75 percent of the undisturbed reference wetland for that wetland type. Reference wetland locations for each wetland type must be submitted for approval to FDEP as outlined in the Monitoring Required section of the permit.	Comparison to reference wetland(s) will be made once the canopy of the reclaimed wetland is clearly trending towards success	Comparison to reference wetland(s) will be made once the canopy of the reclaimed wetland is clearly trending towards success
An average of at least 400 trees (> 4" Diameter at Breast Height (DBH) or > 15' tall) per acre, or if densities meet or exceed the range of native canopy trees for the reference wetland for that community type, is required.	There is currently an average of 179 trees (based on species) per acre, with an average tree height of less than six feet.	There is currently an average of 179 trees (based on species), with an average tree height of less than six feet.
The upper canopy stratum shall exceed 50 percent of the total forested area and in no area of one acre in size shall the tree shrub cover be less than 33 percent total cover. Cover measurements are restricted to woody species exceeding the herbaceous stratum in height (shrubs) or trees > 4" DBH or > 15' tall and those indigenous species that contribute to the overstory of the mature forest of Horse Creek/Payne Creek and their tributaries and that are wetland vegetation listed in Rule 62-340.450, F.A.C.	Currently Canopy cover averages 0.8%.	Currently Canopy cover averages 0.8%.
The total acreage of the wetland shall be jurisdictional, pursuant to Chapter 62-301, F.A.C. The minimum jurisdictional acreage for each wetland type shall be as indicated in the permit drawings and tables	Total Acreage will be calculated upon other attainment of other success criteria. Wetland size, shape and location appear consistent with current permit documents.	Total Acreage will be calculated upon other attainment of other success criteria. Wetland size, shape and location appear consistent with current permit documents.



Doe Branch Wetland Reclamation, 2003



Doe Branch, DB-IS-R8 - Isolated Marsh, 2012



Doe Branch Upland Reclamation, Gopher Tortoise Burrow, 2012

2.1.3 Brushy Creek Complex

The isolated and connected wetlands within the Brushy Creek drainage area were constructed between 2009-2010 with sand tailings backfill and received muck application within the wetland footprint. The complex consists of deep and shallow marsh (FLUCFCS 641) and mixed hardwood forest (FLUCFCS 617) communities surrounded by a forested upland buffer and adjacent preserve to the West (See Appendix A). The uplands were topsoiled and spaded with mature upland trees. Management activities include prescribed burning in the uplands, maintenance herbicide within the wetlands and uplands, and supplemental plantings as needed to achieve required density. The UMAM scores in this complex range from 0.53 (three-year old forested system) to 0.70 (three-year old herbaceous system) with an overall wetland UMAM average score of 0.63, as shown in the table below.

Table 4 Brushy Creek Wetland Reclamation Summary Table

Wetland ID	Time Since Revegetation	Total UMAM Score
SP-BC-2		
BC-IS-R1	3 years	0.63
BC-IS-R16	3 years	0.70
BC-IS-R2	3 years	0.70
Average		0.67
SP-BC-3		
BC-HW-R1A	3 years	0.53
BC-HW-R1B	3 years	0.63
BC-HW-R2	3 years	0.63
BC-IS-R61	3 years	0.60
BC-IS-R63	3 years	0.63
Average		0.60
Total Averages for BC		0.63

The BC-HW-R2 and BC-HW-R1 sites are a mix of forested and non-forested wetlands reclaimed through initial revegetation during 2010. The sites were designed to be flow-through systems, functioning as sloughs or strands with sporadic, slowly flowing water. They are close to the headwater position of the watershed and were designed to occupy a transitional position between large headwater depressional wetlands and a downstream preserved riparian wetland and stream corridor. Over the past year, the upland and ecotone wells have exhibited less than 3.2 feet of annual fluctuation, which is within regional norms for natural ground in flatwoods. The upland piezometers also show good positive gradient toward the reclaimed wetlands, and the desired north to south gradient has been established. Similarly, water level fluctuations within the wetland piezometers also appear to be within natural seasonal norms during this time period. A more detailed discussion of the groundwater hydrology for this system is presented in Appendix C.

No formal wildlife surveys have been conducted within the reclaimed wetlands of the Brushy Creek complex; however, several species of waterfowl and wading birds were observed utilizing the area for refuge and foraging during recent mitigation monitoring events. These species include the yellow-crowned night heron (*Nyctanassa violacea*), woodstork (*Mycteria americana*), white ibis (*Eudocimus albus*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), tri-colored heron (*Egretta tricolor*), and green heron (*Butorides virescens*). A red shouldered hawk (*Buteo lineatus*) was observed perched atop a cabbage palm adjacent to one of the wetlands. One American alligator (*Alligator mississippiensis*) was observed in the deepest portion of BC-HW-R1A.

A variety of anurans was heard calling throughout the wetlands including pig frog (*Rana grylio*), bullfrog (*Rana catesbeiana*), green tree frog (*Hyla cinerea*), southern cricket frog (*Acris gryllus*), and southern leopard frog (*Lithobates sphenoccephalus*). The presence of these native amphibians demonstrates the value of the assemblage of wetland and upland restored habitats on the site.

Table 5 Summary of Release Criteria Relative to Current Site Conditions Based on 2011 Monitoring Reports

Vegetative Monitoring Release Criteria for BC-3	Wetland Hardwood Forest Area		Non-Forested Wetland Area	
	Current site conditions	Success Criteria Being Met	Current site conditions	Success Criteria Being Met
Cover by non-nuisance, non-exotic wetland species listed in Rule 62-340.450, F.A.C., in the herbaceous and shrub layer of the forested wetlands and in each herbaceous wetland shall be at least 80%. Desirable ground cover plant species shall be reproducing naturally, either by normal vegetative spread or through seedling establishment, growth and survival.	Cover by desirable vegetation was 81 percent. Desirable ground cover species are reproducing and recruiting naturally throughout BC-3.	Yes, this trend should continue with ongoing maintenance to control nuisance and exotic species.	Cover by desirable vegetation was 62 percent. Desirable groundcover species are reproducing and recruiting naturally throughout BC-3.	Not at this time, maintenance events will continue to focus efforts on controlling the nuisance and exotic species.
Open water areas shall not exceed 15% of the total acreage of the restored wetland.	Open water was at 3 percent cover.	Yes, desirable species are recruiting naturally into these areas.	Open water was at 8 percent cover.	Yes, desirable species are recruiting naturally into these areas.
Cover by nuisance vegetation species, including, but not limited to cattail (<i>Typha</i> spp.), and (<i>Ludwigia peruviana</i>), shall be limited to less than 10% of the total wetland area. Invasive exotic vegetation shall be limited to less than 0.1% of the total wetland area.	Nuisance vegetation species cover was at 15 percent.	Not at this time, maintenance events will continue to focus efforts on controlling the nuisance and exotic species.	Nuisance vegetation species cover was at 28 percent.	Not at this time, maintenance events will continue to focus efforts on controlling the nuisance and exotic species.
An average of at least 400 trees (~ 4 inches DBH or > 15 feet tall) per acre.	Not applicable at this time. While survival of newly planted trees is high, the height of the trees was not measured.		N/A in non-forested systems.	



Brushy Creek, BC-HW-R1 – Herbaceous Marsh, 2009



Brushy Creek, BC-HW-R1 – Herbaceous, Marsh, 2012

2.1.4 Horse Creek Complex

The isolated and connected wetlands within the Horse Creek drainage area were constructed in 2008 with sand tailings backfill and received muck application within the wetland footprint. The complex consists of deep and shallow marsh (FLUCFCS 641) and wet prairie (FLUCFCS 643) communities surrounded by an upland buffer and adjacent preserve to the West (See Appendix A).. Detailed hydrologic modeling was conducted in order to plan for and achieve shallow wetlands throughout the parcel. The uplands were topsoiled and spaded with mature upland trees. Management activities include maintenance herbicide within the wetlands and uplands, and supplemental plantings as needed to achieve required density. The UMAM scores for these two-year old herbaceous wetlands range from 0.53 to 0.70, with an overall wetland UMAM average score of 0.57, as shown in the table below.

Table 6 Horse Creek Wetland Reclamation Summary Table

Wetland ID	Time Since Revegetation	Total UMAM Score
SP-HC-1		
HC-IS-R10	2 years	0.53
HC-IS-R11	2 years	0.53
HC-IS-R13	2 years	0.53
HC-IS-R14	2 years	0.53
HC-IS-R5	2 years	0.70
HC-IS-R8	2 years	0.60
Average		0.57
Total Average for HC		0.57

No formal wildlife surveys have been conducted within the reclaimed wetlands of the Horse Creek complex, and monitoring has not yet been conducted, however anecdotal observations of wetland-

dependent species using the site for forage and refugia have been made over the past year. Birds include the woodstork (*Mycteria americana*), white ibis (*Eudocimus albus*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), and green heron (*Butorides virescens*). In addition to birds, a variety of anurans were heard calling throughout the wetlands including the pig frog (*Rana grylio*), green tree frog (*Hyla cinerea*), southern cricket frog (*Acris gryllus*), and southern leopard frog (*Lithobates sphenoccephalus*). White-tailed deer (*Odocoileus virginianus*), nine-banded armadillo (*Dasypus novemcinctus*) and feral pigs (*Sus scrofa*) have also been observed in the Horse Creek complex.



Horse Creek HC-IS-R-11 - Wet Prairie, 2012

2.2 Stream Reclamation

Reclamation of stream channels impacted by mining activities is regulated primarily at the state level, with requirements to maintain or improve the biological functions of systems affected by surface mining operations (Chapter 378, Florida Statutes) and to restore impacted streams on a linear foot-for-foot basis (Chapter 62C-16.0051(4), F.S.). Over time in the mining industry, stream reclamation techniques have evolved from allowing channels to self-adjust via natural sediment erosion and transport processes to carefully constructing the stream and riparian system mechanically. CF Industries has been a leader in applying state-of-the-art techniques to construct stream channels. It is CF's intent to not only restore the value of systems impacted by mining operations, but to improve upon the ecologic function of these systems, particularly where impacted areas were previously altered by other land usage (such as agriculture) prior to mining.

This section documents the history and conditions of four reclaimed, low-order streams on CF's Hardee Mine property: R-7, R-10, DB-2, and DB-5. These systems vary in age, construction technique, and basin characteristics and each are described here.

2.2.1 Background and Environmental Setting

Each of the four streams addressed in this section (R-7, R-10, DB-2, and DB-5) are low-order tributaries to Payne Creek, situated on formerly mined lands within the CF Hardee Mine Complex. The Payne Creek basin lies within the Peace River watershed in west central Florida, ultimately draining to the Gulf of Mexico through Charlotte Harbor. Sites R-7 and R-10 are within the Hickey Branch sub-basin draining to Payne Creek from the north, and sites DB-2 and DB-5 are streams within the Doe Branch sub-basin draining to Payne Creek from the south (Figure 1).

Historic low-order streams that existed in the headwater portions of the Hickey Branch and Doe Branch sub-basins and in the vicinity of the stream sites addressed in this section, occurred within the Bone Valley Uplands physiographic province as mapped and described by H.K. Brooks in "Physiographic Divisions of Florida". The distribution of this data from H.K. Brooks was reproduced in geospatial mapping format by the St. Johns River Water Management District for the entire state (SJRWMD, 1997),

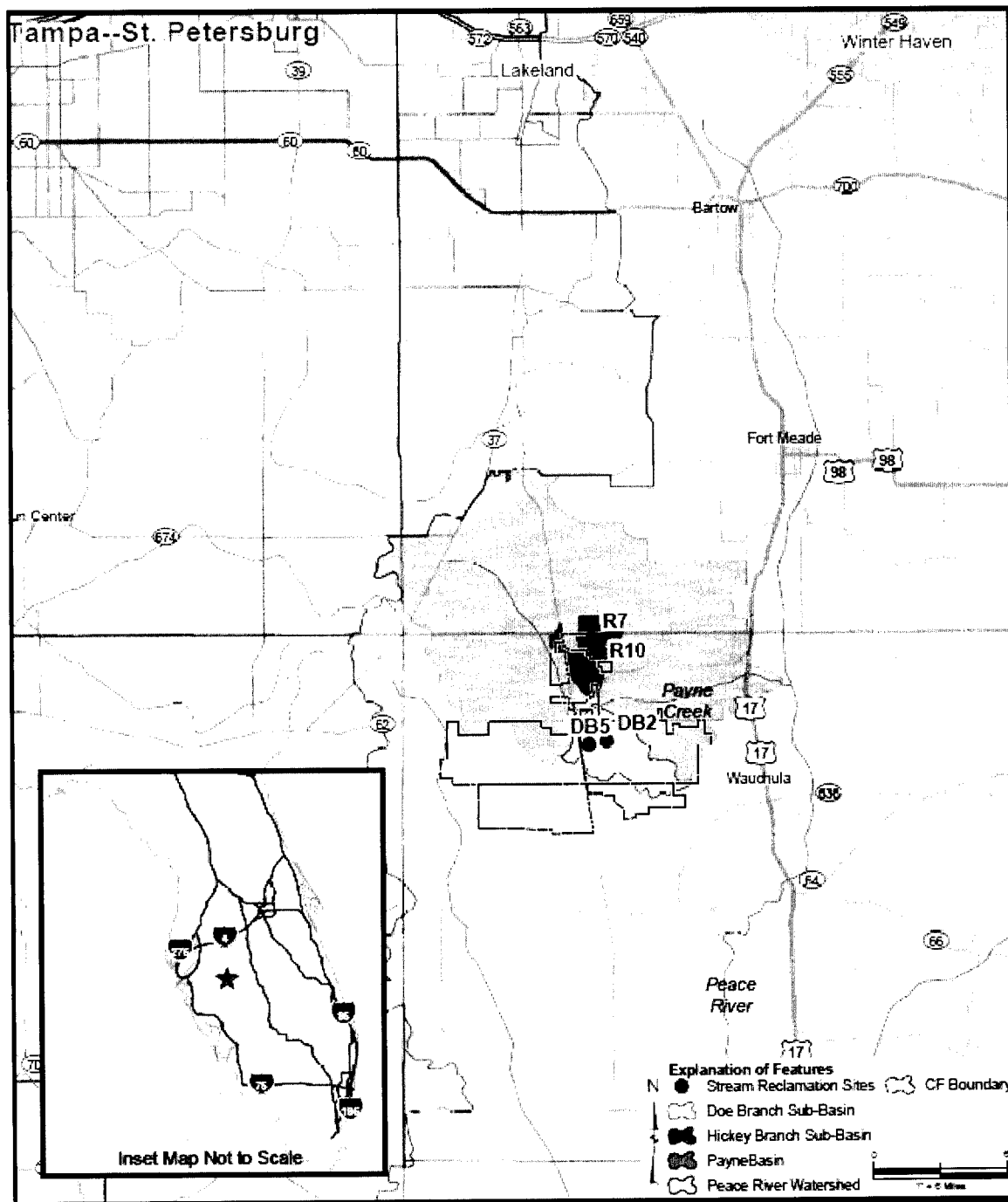


Figure 1 Watershed Location Map

and those maps depict the historic and reclaimed stream contributing areas as situated within the southwestern flatwoods regional landscape community.

2.2.1.1 Hickey Branch Reclamation Streams R-7 and R-10

Review of historic aerial photography indicates mining activity within the contributing basin for Hickey Branch since at least the early 1970s, if not prior. Mining activities are apparent in place of natural Hickey Branch tributaries in the vicinity of R-7 and R-10, as seen in aerials flown in late 1992; reclamation construction of the R-7 and R-10 stream valleys was completed by the late 1980s. The Hickey Branch reclamation project consisted of three phases. R-7 was the first phase and was completed in 1985, while R-10 was the third phase and was completed in 1989. The stream valleys were constructed using early stream reclamation techniques, i.e., by spreading overburden over sandy clay, and allowing the stream channels to be carved via natural hydraulic weathering processes. This technique allows the stream to self-adjust based on the valley slope and weather patterns. As early as 1995, a well-defined channel approximately 200 meters long had formed at the R-7 site (Biological Research Associates - BRA, 1995). Over time, R-7 and R-10 have developed well-defined banks lined with cypress and pop ash roots. While effective, because natural weathering can take up to 10 to 20 years to achieve channel size and shape akin to natural streams, this passive construction method is no longer endorsed by the FDEP to create stream channels.

R-7 Photographs





R-10 Photographs





Since reclamation activities were initiated in the Hickey Branch sub-basin, additional events have occurred that should be noted in this site description. A containment dam breach occurred off CF property at the adjacent property clay settling area just north of the R-7 contributing basin in October 1994. The breach resulted in sheet flow and some concentrated channel flow of clays to wetland communities and conveyances contributing to R-7 and R-10. Some of the resulting sediment still remains in these streams, surrounding wetlands, and ponds, albeit now largely covered by naturally deposited organic sediments. To further improve these systems and demonstrate more advanced reclamation techniques, several enhancement structures were installed in R-7 and R-10 in 2007 and 2012 to increase sinuosity, protect bends, and create habitat and pools. Further, to complete reclamation work in this portion of the formerly mined property, the strand of wetlands, ponds and stream habitats associated with R-7 and R-10 were reconnected at the southern end to the downstream Hickey Branch stream preservation area in 2009.

2.2.1.2 Doe Branch Reclamation Streams DB-2 and DB-5

Review of historic and recent aerial photography indicates that mining activities took place in the Doe Branch sub-basin during the late 1990s. Reclamation within areas surrounding the DB-2 and DB-5 streams, including DB-2 headwater wetland DB-TR-R1 and DB-5 headwater wetland DB-HW-R3, was well under way in the early 2000s. Construction to complete reclamation of the low order streams DB-2 and DB-5 occurred in 2007 and 2009, respectively, using more current stream construction techniques including hydraulic carving and mechanical construction.

Hydraulic Carving

The DB-2 stream reclamation effort was implemented as a direct hydraulic carving stream construction demonstration project. “Hydraulic carving” is a term used to describe an innovative technique whereby water is pumped through a reclaimed valley at the bankfull discharge (as determined from peninsular Florida regional curves) to form a channel equivalent to what would occur over a longer time frame in nature. The theory behind this approach is based on one of the fundamental concepts of fluvial geomorphology—effective discharge. Most streams have highly variable flow regimes dependent on rainfall patterns, with not all flow events doing equivalent amounts of work in forming and maintaining a channel. The flow quantity that does the most overall work is often referred to as the effective discharge.

Bankfull discharge, the flow that occurs just before flow enters its floodplain, is often assumed to be equivalent to the effective discharge in alluvial streams (Knighton, 1998). Under the concept of dominant discharge, if a system were to have constant flow rates at the effective discharge threshold, the channel cross-section would be very similar to what occurs over a very long time series of variable discharge rates. In other words, a stream could be fully dimensioned by applying a constant flow rate for a relatively short period of time at the effective discharge level.

The geomorphology of DB-2 was created using this technique to form a naturally meandering stream with appropriate channel size and riffle-pool spacing within a matter of two months. An approximate 1,100-foot long by 90-foot wide valley was first constructed, and large woody debris was placed throughout the valley to help guide the water. Infrastructure used to implement this project included a mechanical pump at the upstream end, a sink at the downstream end to accumulate the predicted sediment yield during the hydraulic carving period, and a return water ditch to recirculate the water back to the pump (Figure 2). Repeat surveys were conducted each week to document channel evolution (Figure 3). Once the channel had reached the predicted size, after a few weeks of pumping, additional large woody debris was installed throughout the channel to increase habitat diversity.

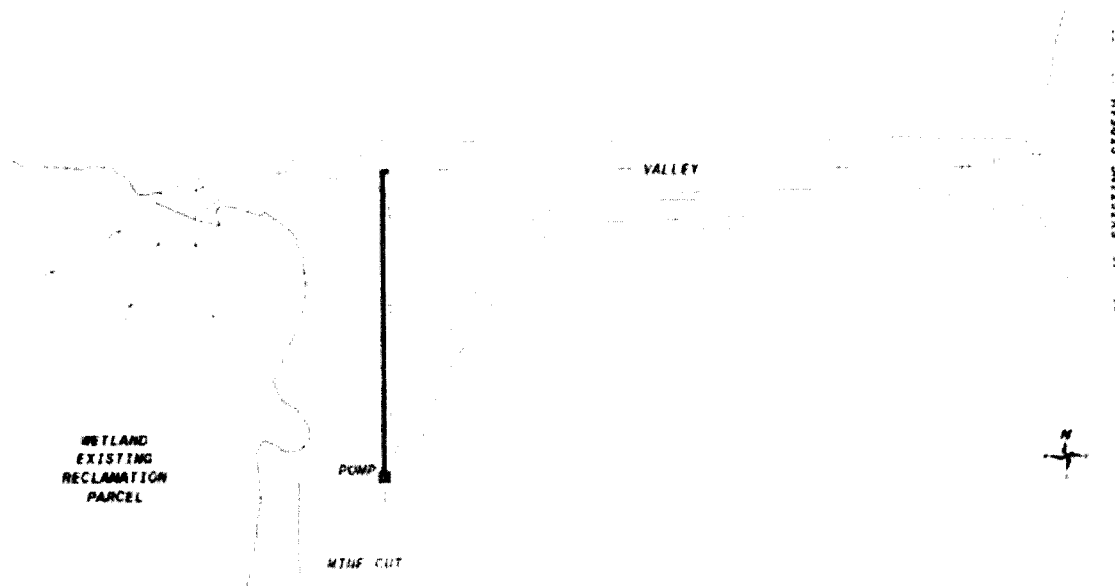


Figure 2 **DB-2 Infrastructure**

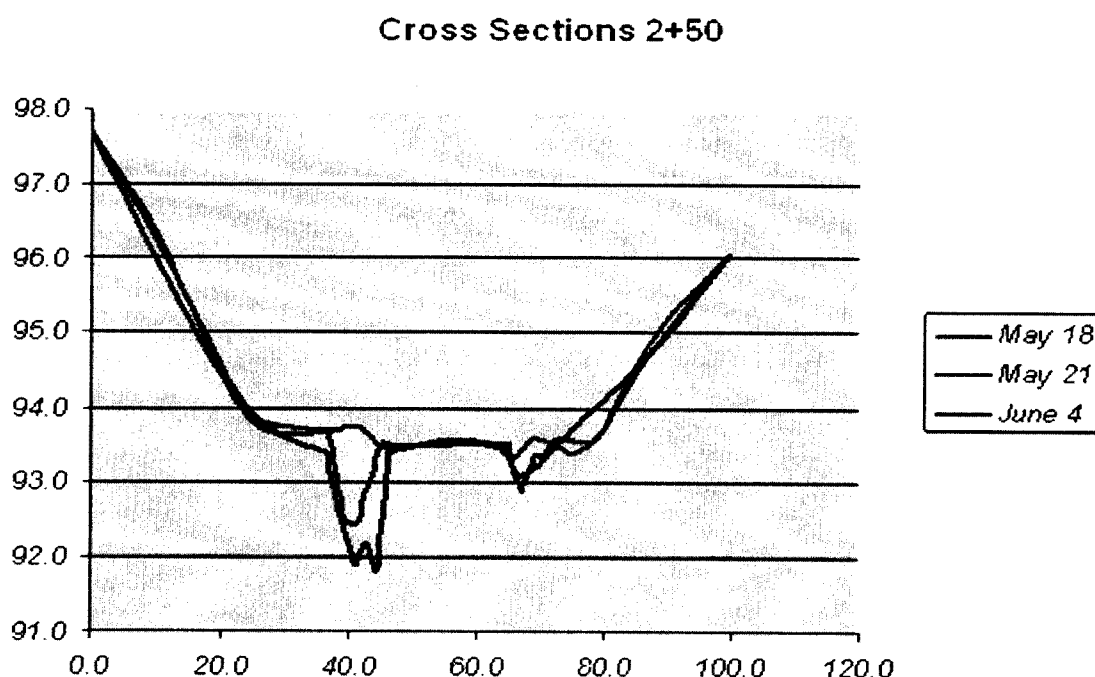


Figure 3 DB-2 Repeat Cross-Sectional Survey

Perhaps the greatest benefits to this approach are that the water “conditions” the site in a very natural way, and the processes serve to create open channels only where the valley slope can support them. This latter point is very important in peninsular Florida, which has many discontinuous open channels in a deranged network (e.g., lots of large in-line depressions scattered between open channels, arranged like beads on string). This technique also takes advantage of existing stormwater management infrastructure and can represent a savings over mechanical construction, especially for long reclaimed stream segments. The downstream sump, return water ditch, mechanical pump, and pipes infrastructure currently remain in place at DB-2, as it has not yet been connected to its contributing basin and downstream receiving wetland preservation area. As a result, the infrastructure remains in place to perform necessary flow maintenance flushes of the stream channel, but will ultimately be removed when the stream is released.

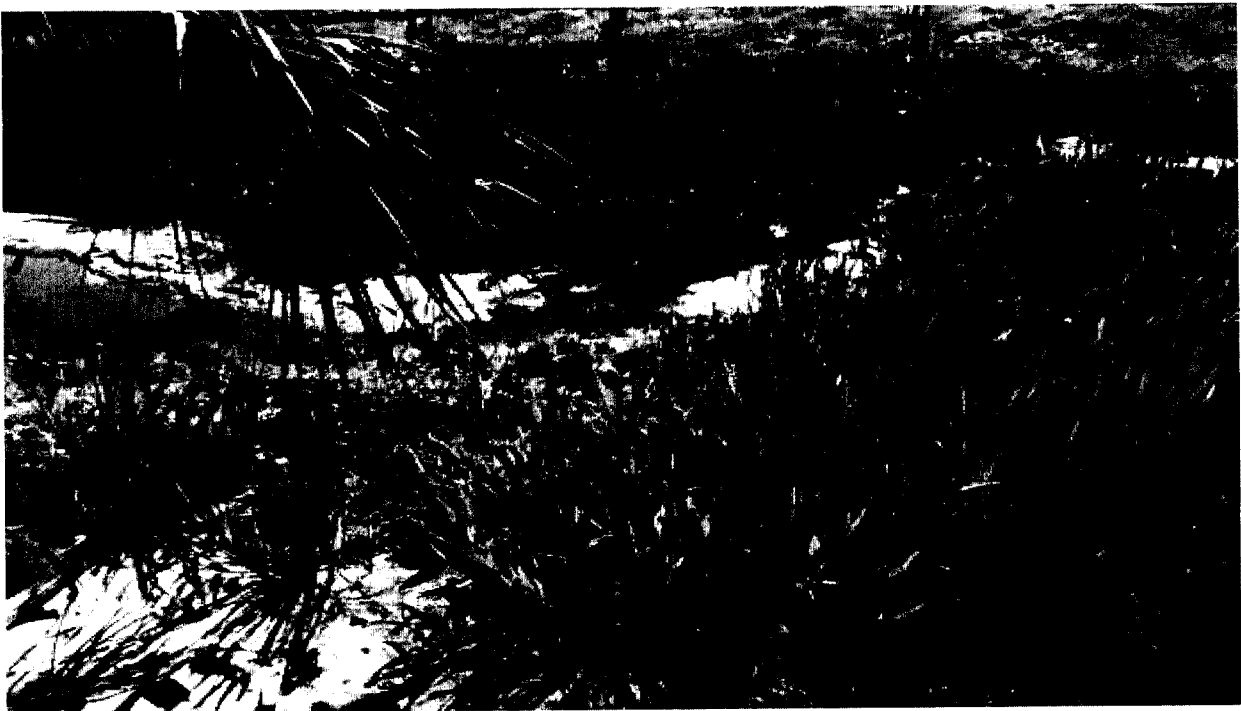
Mechanical Construction

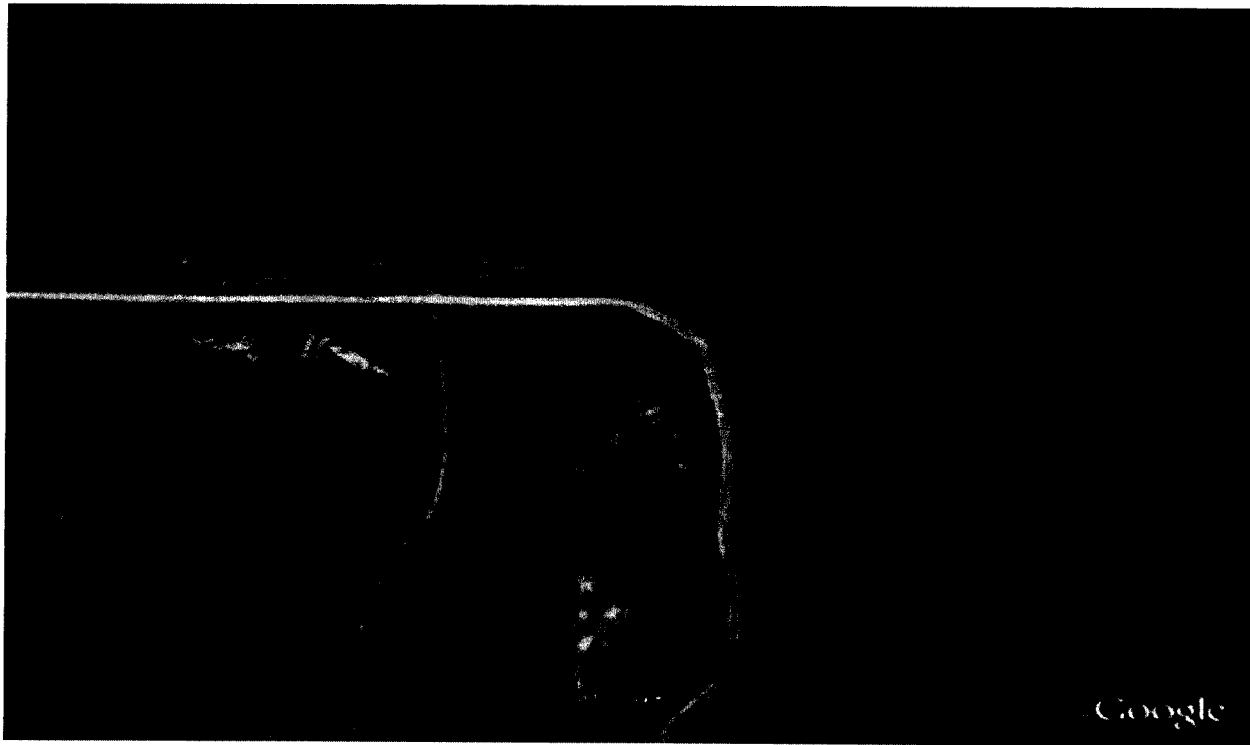
The 1000-foot long DB-5 stream channel was created via mechanical construction in 2009 to replace an existing ditch with a naturally meandering stream channel of appropriate size and shape connecting the headwater wetland to the downstream receiving wetland preserve. Mechanical construction is a technique by which a stream is built in accordance with a detailed plan set outlining proper stream dimension (width and depth), bend geometry, and riffle-pool sequence. Design specifications for DB-5 were based on natural channel designs derived from regional data to ensure that the stream fit its watershed (Kiefer 2010, Blanton 2008). Natural channel design approaches make sense, in part, because CF’s integrated groundwater-surface water modeling and hydrology monitoring data indicate that the surface and subsurface drainage characteristics of the post-reclamation landscape are within the natural seasonal range of fluctuations found in flatwoods-dominated physiographies typical of the region.

Soil bioengineering techniques were incorporated to approximate Florida’s vegetative conditions. A bottom-up approach was taken, in which the valley flat was first constructed at a subgrade elevation to the series of desired pool depths along the valley’s meander belt. Stream banks were then built by laying mucky mineral top soil to a height of two feet along the length of the meandering left and right banks. Constructed stream banks were then wrapped with erosion control blankets (ECB), and most of the bank length was backfilled with live saw palmetto root masses. Palmetto roots were installed not only to

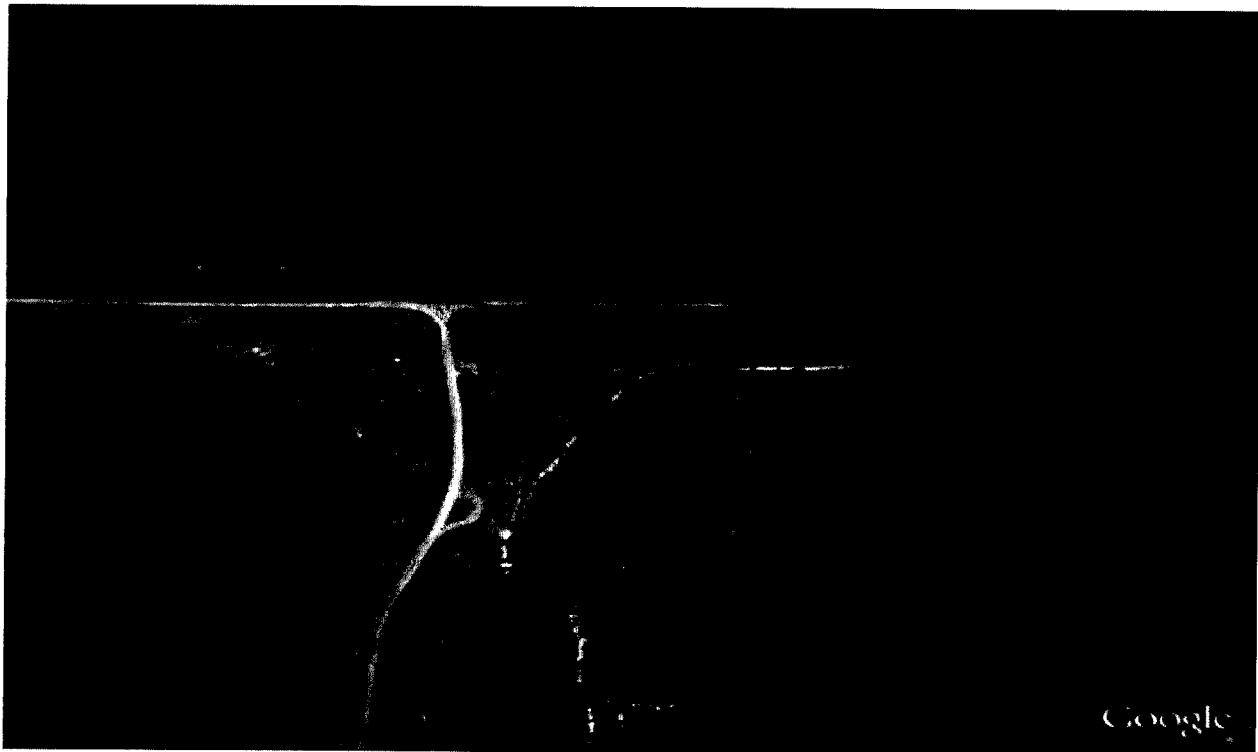
provide bank stability and to hold the soil together once the ECB decomposes, but also because natural Florida headwater streams often have saw palmetto along their banks. The remaining valley flat was then filled with native sandy top soil. Last, fine to medium sandy soil was placed at the riffles and blended towards the pools. Habitat amendments such as large woody debris, v-log weirs (to induce pools), and root wads were also installed. DB-5 was built in just three weeks (eight actual construction days) and clearly demonstrates CF's ability to get properly-dimensioned streams in the ground quickly. This method is likely to be more efficient and cost-effective than hydraulic carving for stream valleys less than 1,000 feet long.

DB-2 Photographs



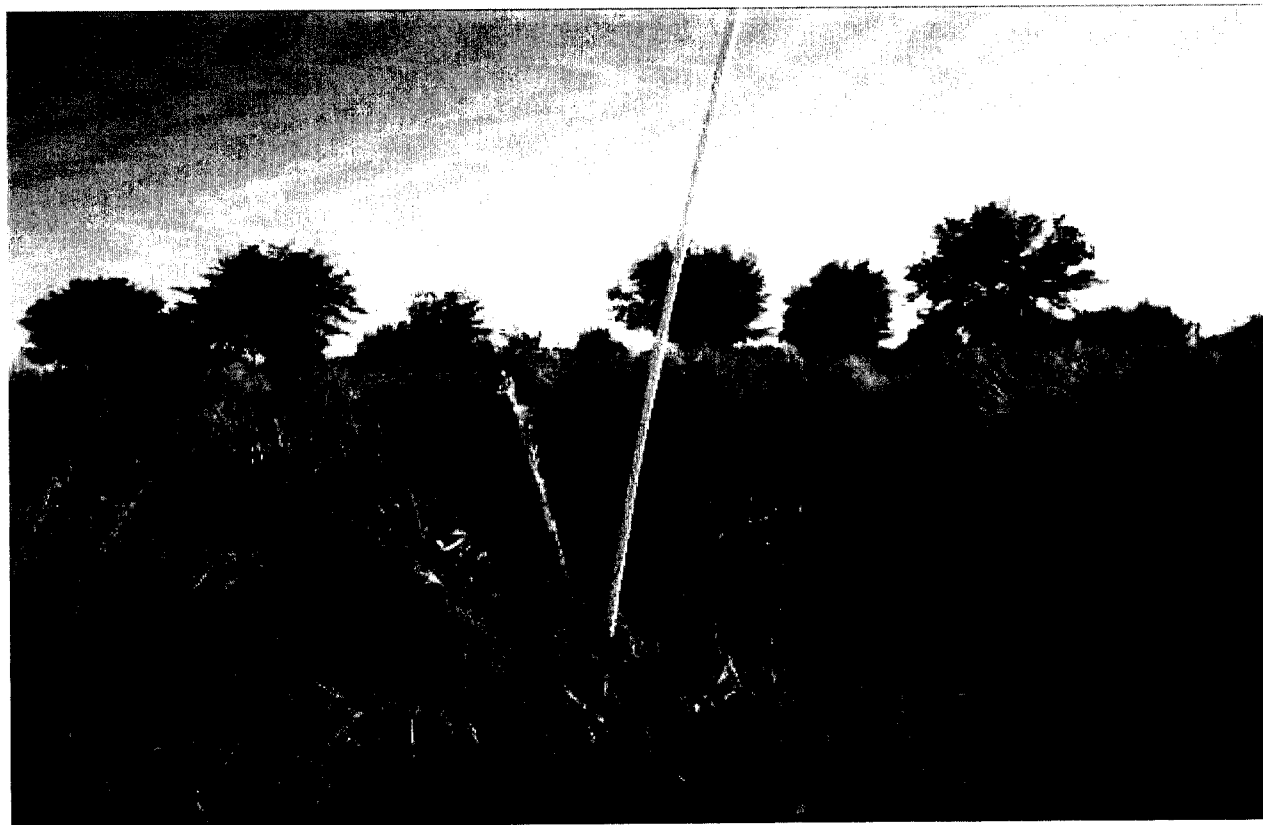


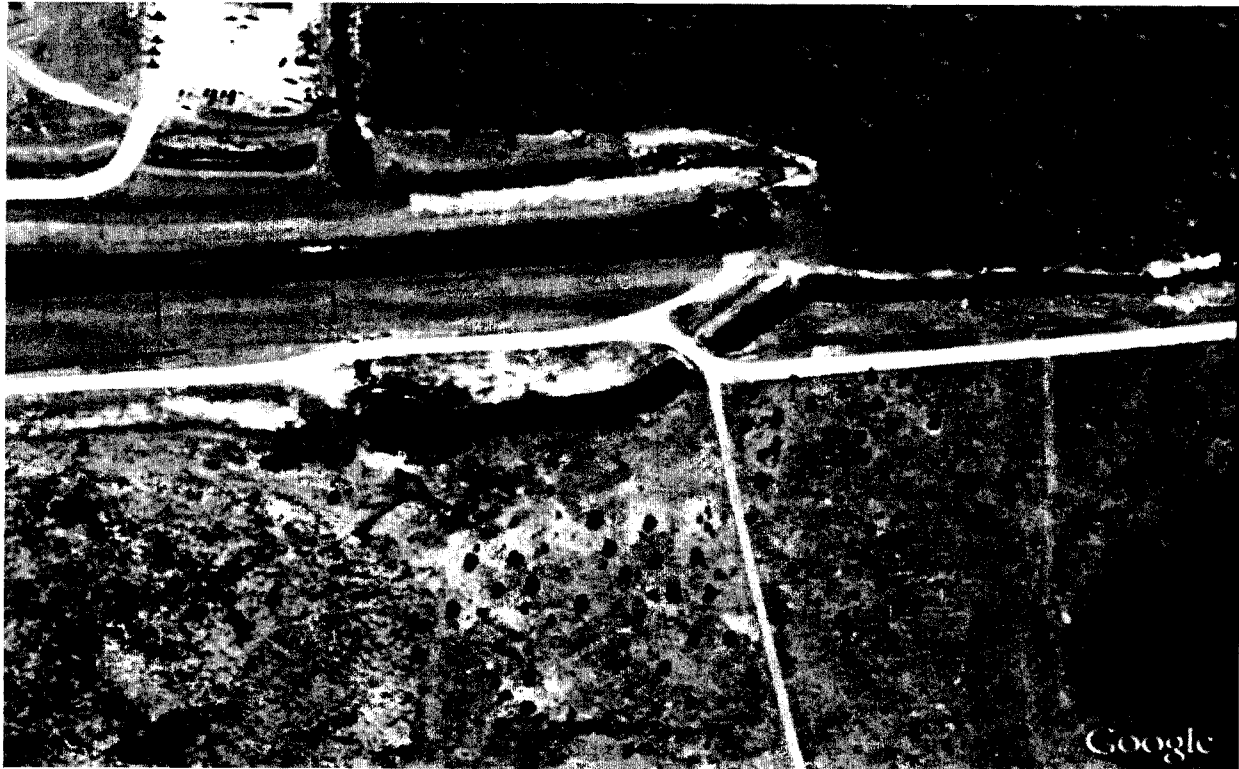
2007



2012

DB-5 Photographs





2008



2012

2.2.2 Documentation of Conditions

2.2.2.1 *Habitat Assessment*

Habitat quality at CF's reclamation stream sites has been assessed using the FDEP Habitat Assessment (HA) methodology, in which eight attributes known to potentially affect stream biota are evaluated and scored, including:

- Substrate Diversity – Relative quantity and productivity of macroinvertebrate habitats;
- Substrate Availability – Relative habitat abundance;
- Water Velocity – suitability to support desired macroinvertebrate taxa;
- Habitat Smothering – sedimentation;
- Artificial Channelization – Sinuosity and connection with floodplain;
- Bank Stability – Sign of or potential for erosion;
- Riparian Buffer Zone Width – proximity to human activities or landscape alterations; and
- Riparian Zone Vegetation Quality – Native species, community structure, and zonation (FDEP, 2008b).

Hickey Branch reclamation streams R-7 and R-10 have been assessed using the HA over the last 14 and 11 years, respectively. R-7's HA scores have ranged from 99 to 120, falling within the Suboptimal category, while R-10's HA scores have ranged from 107 to 129, falling within both the Optimal and Suboptimal categories. Habitat types mapped at these sites include root mats, leaf packs, large woody debris, and aquatic vegetation. Some level of habitat smothering, however, has been an issue at both sites due to the previously mentioned off-site clay settling area dam failure in 1994, which has adversely affected the area by contributing fine sediment.

Doe Branch reclamation sites DB-2 and DB-5 are considerably younger in age (five and three years old, respectively) and have not yet been fully connected to their reclaimed watersheds. One HA has been performed at each site; however, the streams were dry at the time of sampling, and bankfull conditions were thus assumed for habitat mapping purposes. HA scores ranged from 122 to 130, falling in the Optimal category. Habitat types included snags and aquatic vegetation.

In a study comparing reclaimed streams to unmined streams, FDEP (2007) found that mean coverage of snags was more than twice as high in unmined streams than reclaimed streams and leaf pack coverage was three times higher in unmined streams. This is because tree canopy in reclaimed riparian forests can take years to fully develop and provide materials such as snags and leaves to the stream system. CF has thus taken steps in recent years to increase habitat diversity and availability in the older reclaimed sites (R-7 and R-10) by installing enhancement structures such as V-log weirs, J-hooks, wing deflectors, and random large woody debris that both encourage the formation of bends and pools and create instant habitat. One of the benefits of actively constructing stream channels such as DB-2 and DB-5 is that these types of habitat amendments can be prescribed and added to the stream during construction, thus providing instant habitat. This is a technique CF currently employs in its stream reclamation projects.

Although the HA method is a stream evaluation method to assess the physical health of a stream, it is also applied as the first step in the more intensive Stream Condition Index (SCI) sampling protocol described further in the section below. Because the HA is used as part of a macroinvertebrate sampling method, it requires specific flow conditions. The HA method can, however, be applied in a hypothetical manner to assess the physical functions of the stream (as was done in the case of DB-2 and DB-5), although the scoring results of such investigations may not be viewed as valid under the DEP Standard Operating Procedures because these low order streams rarely meet the requisite flow duration for a valid application.

2.2.2.2 *Biota*

Macroinvertebrates

The macroinvertebrate communities have been sampled and assessed using a variety of sampling protocols including Hester-Dendy, both the Bio-Recon, and Stream Condition Index (SCI) methodologies at Hickey Branch stream reclamation sites R7 and R10 for many years (Henslick, Seagle, Steinbaum & Associates 1991, BRA 1995 & 2001, FDEP 1999 & 2007). The Bio-Recon sampling collects invertebrates from multiple substrates using four discrete dip net sweeps. The community is then assessed based on the following three categories, two of which must meet a minimum species criterion in order to pass the BioRecon:

- Total Taxa - the total number of macroinvertebrate species at a site;
- Florida Index - assigns points to aquatic macroinvertebrates based on their sensitivity to pollution, with a higher Florida index considered healthy; and
- Ephemeroptera/Plecoptera/Trichoptera (EPT) Index - sums the number of mayfly/stonefly/caddisfly species present, with higher EPT values associated with healthier systems.

The SCI macroinvertebrate sampling technique involves collection of macroinvertebrates by performing 20 sweeps of representative major and minor aquatic habitat within a specified stream sampling reach. Macroinvertebrates are sorted in the laboratory, and the SCI stream performance score is developed based on the following ten metrics:

- Total taxa
- Ephemeroptera taxa
- Trichoptera taxa
- % filter feeder
- Long-lived taxa
- Clinger taxa
- % dominance
- % tanytarsini
- Sensitive taxa
- % very tolerant

Species richness of the macroinvertebrate communities at R-7 and R-10 has increased substantially over time, with 46 and 30 total taxa present, respectively, during the most recent sampling event in August 2011 (Tables 7 and 8). Various feeding guilds are present and the number of EPT species has increased over time. Both the total number of species and number of EPT species found within R-7 and R-10 fall within the range or exceed those observed in low-order, unmined streams (FDEP, 2007). In an older study of low-order stream systems in the area, R-7 and R-10 were the only sites to have caddisfly and mayfly species (other than the downstream unmined portion of Hickey Branch), despite the fact that they were reclamation streams (or directly downstream of reclamation streams) (BRA, 2001).

Even so, neither R-7 nor R-10 have passed a BioRecon or SCI assessment. This is not surprising nor does it indicate that these reclamation streams are not healthy, as FDEP (2000b and 2007) and BRA (2001) found that nearly all the sites in their studies (which included both low-order reclaimed and unmined streams) failed the revised BioRecon, indicating that the criteria used in these assessments may not be appropriate for low-order streams with less than perennial flow that are in close association with wetland systems. However, FDEP (2007) found that taxa richness values and the number of EPT taxa were similar in both reclaimed and unmined streams, with reclaimed streams providing functions similar to those of unmined streams approximately 13 to 14 years after construction. FDEP (2007) suggested that

this timeframe could be accelerated by increasing floodplain plantings and adding habitat structure such as woody debris within the channel, which CF has done at its stream reclamation sites.

Macroinvertebrates have not yet been sampled at Doe Branch reclamation stream sites DB-2 and DB-5 as these systems have not yet been tied to their entire watersheds and therefore do not meet the specific flow conditions necessary to perform these assessments.

Table 7 CF Reclamation Stream Macroinvertebrate Taxa

		5/28/1991	10/30/2001	8/26/2011
R-7	EPT Taxa*	1	2	2
	Other Taxa	10	12	44
	Total Taxa	11	14	46
R-10	EPT Taxa*	1	2	5
	Other Taxa	5	12	25
	Total Taxa	6	14	30

Table 8 CF Reclamation Stream Macroinvertebrate Species List

Phylum	Class	Order	Family	Genus Species	R-7			R-10		
					5/28/1991	10/30/2001	8/26/2011	5/28/1991	10/30/2001	8/9/2011
Annelida	Hirudinea	Arhynchobdellida	Erpobdellidae				X			
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	<i>Helobdella</i> sp.			X			
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	<i>Placobdella</i> sp.			X			
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	sp.		X	X		X	
Annelida	Hirudinea			sp.	X			X		
Annelida	Oligochaeta			sp.		X	X		X	X
Arthropoda	Arachnida			sp.					X	
Arthropoda	Insecta	Coleoptera	Chrysomelidae	sp.			X			
Arthropoda	Insecta	Coleoptera	Dryopidae	<i>Pelonomus obscurus</i>			X			
Arthropoda	Insecta	Coleoptera	Dryopidae	sp.			X			X
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Dubiraphia vittata</i>			X			X
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Microcylloepus</i> sp.					X	X
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Stenelmis</i> sp.			X			X
Arthropoda	Insecta	Coleoptera	Gyrinidae	<i>Gyretes tricolor</i>			X			
Arthropoda	Insecta	Coleoptera	Gyrinidae	<i>Dineutus</i> sp.	X	X			X	
Arthropoda	Insecta	Coleoptera	Haliphidae	<i>Peltochytes dietrichi</i>		X	X			
Arthropoda	Insecta	Coleoptera	Haliphidae	<i>Peltochytes</i> sp.	X		X			
Arthropoda	Insecta	Coleoptera	Hydrophilidae	<i>Derallus altus</i>			X			
Arthropoda	Insecta	Coleoptera	Hydrophilidae	<i>Hydrobiomorpha</i> sp.			X			
Arthropoda	Insecta	Coleoptera	Hydrophilidae	<i>Hydrophilus</i> sp.			X			
Arthropoda	Insecta	Coleoptera	Hydrophilidae	sp.	X	X	X			
Arthropoda	Insecta	Coleoptera	Noteridae	<i>Hydrocanthus</i> sp.			X			
Arthropoda	Insecta	Coleoptera	Noteridae	<i>Suphisellus</i> sp.			X			
Arthropoda	Insecta	Coleoptera	Scirtidae	sp.						X
Arthropoda	Insecta	Diptera	Chironomidae	<i>Ablabesmyia mallochii</i>						X
Arthropoda	Insecta	Diptera	Chironomidae	<i>Larsia</i> sp.			X			X
Arthropoda	Insecta	Diptera	Chironomidae	<i>Lauterborniella</i> sp.			X			
Arthropoda	Insecta	Diptera	Chironomidae	<i>Pentaneura</i> sp.						X
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polypedium halterale</i> grp.			X			
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytus</i> sp.			X			
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytarsus</i> sp.						X
Arthropoda	Insecta	Diptera	Chironomidae	<i>Iribeloa fuscicornis</i>						X
Arthropoda	Insecta	Diptera	Chironomidae	sp.	X	X			X	
Arthropoda	Insecta	Diptera	Chironomidae	<i>Chironomus riparius</i>	X					
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polypedium</i> sp.	X					
Arthropoda	Insecta	Diptera	Simuliidae	sp.						X
Arthropoda	Insecta	Diptera	Stratiomyidae	sp.			X			X
Arthropoda	Insecta	Diptera	Tabanidae	sp.			X			X
Arthropoda	Insecta	Diptera (pupa)		sp.			X			X
Arthropoda	Insecta	Ephemeroptera	Caenidae	<i>Caenis</i> sp.	X		X			X
Arthropoda	Insecta	Ephemeroptera		sp.		X			X	X
Arthropoda	Insecta	Hemiptera	Belostomatidae	sp.			X			
Arthropoda	Insecta	Hemiptera	Naucoridae	<i>Pelocoris</i> sp.			X			
Arthropoda	Insecta	Lepidoptera	Crambidae	<i>Parapomox</i> sp.						X
Arthropoda	Insecta	Odonata	Calopterygidae	<i>Calopteryx</i> sp.					X	
Arthropoda	Insecta	Odonata	Coenagrionidae	<i>Enallagma</i> sp.		X	X		X	
Arthropoda	Insecta	Odonata	Coenagrionidae	<i>Ishmura</i> sp.			X	X		
Arthropoda	Insecta	Odonata	Coenagrionidae	<i>Nehalennia</i> sp.			X			
Arthropoda	Insecta	Odonata	Coenagrionidae	<i>Telebasis byersi</i>			X			
Arthropoda	Insecta	Odonata	Coenagrionidae	sp.			X			
Arthropoda	Insecta	Odonata	Gomphidae	<i>Species A</i>						X
Arthropoda	Insecta	Odonata	Gomphidae	<i>Species B</i>						X
Arthropoda	Insecta	Odonata	Libellulidae	sp.		X	X			X
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Cheumatopsyche</i> sp.		X		X	X	X
Arthropoda	Insecta	Trichoptera	Leptoceridae	<i>Oecetis</i> sp.						X
Arthropoda	Insecta	Trichoptera	Philoctenidae	<i>Wormaldia moesta</i>						X
Arthropoda	Insecta	Trichoptera		sp.			X			
Arthropoda	Malacostraca	Amphipoda	Hyalellidae	<i>Hyalella azteca</i>	X	X	X	X	X	X
Arthropoda	Malacostraca	Decapoda	Cambaridae	<i>Procambarus</i> sp.		X	X		X	
Arthropoda	Malacostraca	Decapoda	Cambaridae	sp.			X			X
Arthropoda	Malacostraca	Decapoda	Palaemonidae	<i>Palaemonetes</i> sp.		X	X			X
Arthropoda	Malacostraca	Isopoda	Asellidae	sp.			X			X
Mollusca	Bivalvia	Veneroida	Pisidiidae	<i>Pisidium</i> sp.			X			X
Mollusca	Bivalvia			sp.			X			
Mollusca	Gastropoda	Basommatophora	Ancylidae	<i>Hebetoncyclus excentricus</i>				X		
Mollusca	Gastropoda	Basommatophora	Physidae	<i>Physella gyrina</i>			X			X
Mollusca	Gastropoda	Basommatophora	Planorbidae		X		X	X	X	
Mollusca	Gastropoda	Neotaenioglossa	Hydrobiidae							X
Mollusca	Gastropoda	Neotaenioglossa	Pleurocendae	<i>Elimia</i> sp.			X			
Mollusca	Gastropoda	Neotaenioglossa	Thianidae	<i>Melanoides tuberculata</i>		X			X	
Nemata				sp.	X					
Total Taxa					11	14	46	6	14	30

Fish and Wildlife

Numerous fish and wildlife species have been observed utilizing CF's reclamation stream sites (Table 9). These observations have been general in nature, with the exception of a quantitative fish sampling event conducted at R-7 in late 1993 (BRA, 1995). The species assemblage found in R-7 at that time closely matches that of a typical Florida wetland, which is common for low-order streams. Quantitative wildlife surveys have been conducted in the headwater wetlands of these reclamation sites, and future monitoring events at the reclaimed stream sites will include a fish sampling component.

Table 9 CF Reclamation Stream Fish and Wildlife

Scientific Name	Common Name	R-7	R-10	DB-2	DB-5
Fish					
<i>Clarias batrachus</i>	Walking catfish	X			
<i>Elassoma zonatum</i>	Banded pygmy sunfish	X			
<i>Etheostoma fusiforme</i>	Swamp darter	X			
<i>Gambusia affinis</i>	Mosquitofish	X			
<i>Heterandria formosa</i>	Least killifish	X			
<i>Lepomis gulosus</i>	Warmouth	X			
<i>Lepomis macrochirus</i>	Bluegill	X			
<i>Notropis petersoni</i>	Coastal shiner	X			
Amphibians					
<i>Rana grylio</i>	Pig frog	X			
<i>Rana sphenoccephala</i>	Southern leopard frog	X			
Reptiles					
American alligator	Alligator mississippiensis	X		X	X
<i>Sternotherus odoratus</i>	Musk turtle		X		
Birds					
<i>Buteo lineatus</i>	Red shoulder hawk	X			X
<i>Cathartes aura</i>	Turkey vulture	X			
<i>Elanoides forficatus</i>	Swallowtail kite				X
Mammals					
<i>Sus scrofa</i>	Feral hogs		X	X	
<i>Sylvilagus floridanus</i>	Cottontail rabbit			X	

In-Stream and Floodplain Vegetation

Previous quantitative vegetative monitoring has occurred on transects lying within the reclaimed streams' headwater wetlands, but not within the stream channels and adjacent floodplains. Qualitative monitoring was thus completed in May 2012 to document in-stream and floodplain vegetative species at CF reclamation stream sites R-7, R-10, DB-2, and DB-5 (Table 10). The reclamation sites boast a high diversity of plant species. The older reclamation sites, R-7 and R-10, have a more mature canopy providing shade to the streams, while younger DB-2 and DB-5 currently have a more open canopy allowing for the growth of more aquatic vegetation within the stream channel. Approximately 25 percent of DB-5's banks were lined with saw palmetto, demonstrating CF's ability to create palmetto-lined streams.

Table 10 CF Stream Reclamation In-Stream and Floodplain Vegetative Species

Scientific Name	Common Name	DB2	DB5	R7	R10
<i>Acer rubrum</i>	red maple	x	x	x	x
<i>Alternanthera philoxeroides</i>	alligator weed	x	x	x	x
<i>Ambrosia artemisiifolia</i>	ragweed	x	x	x	x
<i>Ampelopsis arborea</i>	pepper-vine			x	x
<i>Andropogon glomeratus</i>	bushy broom grass	x	x		
<i>Andropogon virginicus</i> var. <i>glaucus</i>	chalky bluestem	x			
<i>Asimina reticulata</i>	paw paw		x		
<i>Baccharis halimifolia</i>	saltbush	x	x		
<i>Bacopa monnieri</i>	smooth water hyssop	x	x		
<i>Bidens alba</i>	beggar ticks	x			
<i>Boehmeria cylindrical</i>	bog hemp			x	x
<i>Callicarpa americana</i>	beauty berry	x			
<i>Celtis laevigata</i>	hackberry			x	
<i>Centella asiatica</i>	spadeleaf	x			
<i>Cephalanthus occidentalis</i>	button bush	x		x	x
<i>Chenopodium ambrosioides</i>	Mexican tea	x			
<i>Cicuta</i> spp.	water hemlock			x	x
<i>Cirsium nuttallii</i>	Nuttall's thistle	x	x	x	
<i>Commelina diffusa</i>	day flower	x		x	x
<i>Coreopsis floridana</i>	Florida tickseed	x			
<i>Cuphea hyssopifolia</i>	Florida heather	x			
<i>Cynodon dactylon</i>	Bermuda grass	x	x		
<i>Cyperus</i> spp.	flatsedge		x	x	x
<i>Dichromena colorata</i>	white top sedge	x			
<i>Diospyros virginiana</i>	persimmon	x	x		
<i>Eclipta alba</i>	false daisy		x	x	
<i>Eragrostis</i> spp.	love grass	x			
<i>Erechtites hieraciifolia</i>	fireweed	x	x	x	
<i>Eupatorium capillifolium</i>	dogfennel	x	x		x
<i>Eupatorium leptophyllum</i>	marsh thoroughwort		x		
<i>Fraxinus caroliniana</i>	pop ash			x	x
<i>Hydrocotyle umbellata</i>	dollarweed	x	x	x	x
<i>Imperata cylindrica</i>	cogon grass	x			
<i>Iris virginica</i>	blue flag iris				x
<i>Juncus marginatus</i>	rush	x			
<i>Juncus</i> spp.	soft rush	x	x		
<i>Lepidium virginicum</i>	pepper grass	x	x	x	
<i>Liquidambar styraciflua</i>	sweet gum	x	x	x	x
<i>Ludwigia octovalvis</i>	water-primrose	x			
<i>Ludwigia peruviana</i>	primrosewillow	x	x	x	
<i>Ludwigia repens</i>	red ludwigia	x	x	x	
<i>Luziola fluitans</i> (syn. <i>Hydrochloa caroliniensis</i>)	water grass	x	x		
<i>Magnolia virginiana</i>	sweet bay	x	x		
<i>Mikania scadens</i>	hemp vine	x	x		
<i>Mimosa microphylla</i>	sensitive vine		x		
<i>Myrica cerifera</i>	wax myrtle	x	x	x	x
<i>Nephrolepis</i> spp.	sword fern				x
<i>Oxalis stricta</i>	yellow sorrel	x			
<i>Panicum hemitomon</i>	maidencane		x	x	
<i>Panicum repens</i>	torpedo grass	x	x		
<i>Panicum virgatum</i>	switchgrass	x			
<i>Parietaria</i> spp.	pellitories	x	x		
<i>Parthenocissus quinquefolia</i>	Virginia creeper			x	

Scientific Name	Common Name	DB2	DB5	R7	R10
<i>Phyla nodiflora</i>	frog fruit	x	x		
<i>Phytolacca americana</i>	pokeweed	x	x	x	
<i>Pinus eliottii</i>	slash pine	x	x		
<i>Pistia stratiotes</i>	water lettuce			x	
<i>Pluchea odorata</i>	salt marsh fleabane	x	x	x	
<i>Polygonum hydropiperoides</i>	smart weed	x	x	x	
<i>Pontederia cordata</i>	pickerel weed	x		x	
<i>Pterocaulon pycnostachyum</i>	blackroot	x	x		
<i>Quercus laurifolia</i>	laurel oak	x			
<i>Quercus virginiana</i>	live oak	x	x		
<i>Rhus copallinum</i>	winged sumac		x		
<i>Rubus spp.</i>	blackberry		x		
<i>Rumex obtusifolius</i>	bitter dock (spurge)		x		
<i>Sabal palmetto</i>	cabbage palm	x			
<i>Sagittaria graminea</i>	grassy arrowhead	x			
<i>Sagittaria lancifolia</i>	duck potato	x	x		
<i>Salix caroliniana</i>	Carolina willow			x	x
<i>Sambucus canadensis</i>	elderberry		x		
<i>Saururus cernuus</i>	lizards tail			x	x
<i>Schinus terebinthifolius</i>	Brazilian pepper			x	
<i>Serenoa repens</i>	saw palmetto	x	x	x	
<i>Setaria geniculata</i>	knotproof bristlegrass		x		
<i>Solanum viarum</i>	tropical soda apple	x	x		
<i>Spartina bakeri</i>	sand cordgrass		x		
<i>Sporobolus indicus</i>	smut grass		x		
<i>Taxodium distichum</i>	bald cypress			x	x
<i>Thelypteris spp.</i>	shield fern			x	x
<i>Toxicodendron radicans</i>	poison ivy				x
<i>Tripsacum dactyloides</i>	fakahatchee grass	x	x		
<i>Typha latifolia</i>	cattail		x		
<i>Ulmus Americana</i>	American elm			x	x
<i>Urena lobata</i>	Caesarweed			x	
<i>Vitis rotundifolia</i>	muscadine		x		
<i>Woodwardia virginica</i>	Virginia chain fern				x

2.2.3 Hydrology

Staff gages equipped with continuously-recording pressure transducers were installed within the reclamation streams to document water levels over time at the Hickey Branch sites (R-7 and R-10) in December 2009 and the Doe Branch sites (DB-2 and DB-5) in February 2011. Water stages (gage height) over time are provided in Figures 4-7. Flows are not reported, as stage-discharge rating curves are currently being developed in order to relate gage height to flow. As can be seen in Figures 3 and 4, as well as observed in the field, R-7 and R-10 contain water the majority of the time; however, it is uncertain how many days per year the flow velocities represent ideal conditions for metrics such as the SCI. DB-2 is not yet connected to its entire watershed, and the spikes seen in the hydrograph likely represent times when the pump has been turned on to conduct maintenance flows through the system (Figure 5). DB-5 is clearly intermittent, receiving flow only when its headwater wetland overflows, as is typical in low-order Florida streams (Figure 6, Table 5).

Hickey Branch, which remains unmined south of CF's North Pasture, was also assessed to determine if its hydrology has been negatively impacted by mining and subsequent reclamation. Long-term monitoring of flow, macroinvertebrates, and water quality has been undertaken in this portion of the stream since the early 1990s and has shown that mining has not negatively impacted unmined Hickey Branch, which ultimately contributes to Payne Creek. Based on an analysis of the long-term flow record, the unmined portion of Hickey Branch was found to have fewer zero flow days per year than other low-

order, flatwoods draining reference streams (all but one of which have been gaged and monitored by AMEC for the last three plus years) (Figure 7, Table 11). Hickey Branch's macroinvertebrate community also does not appear to be negatively impacted by upstream mining and subsequent reclamation, as indicated by sampling conducted by BRA (2001).

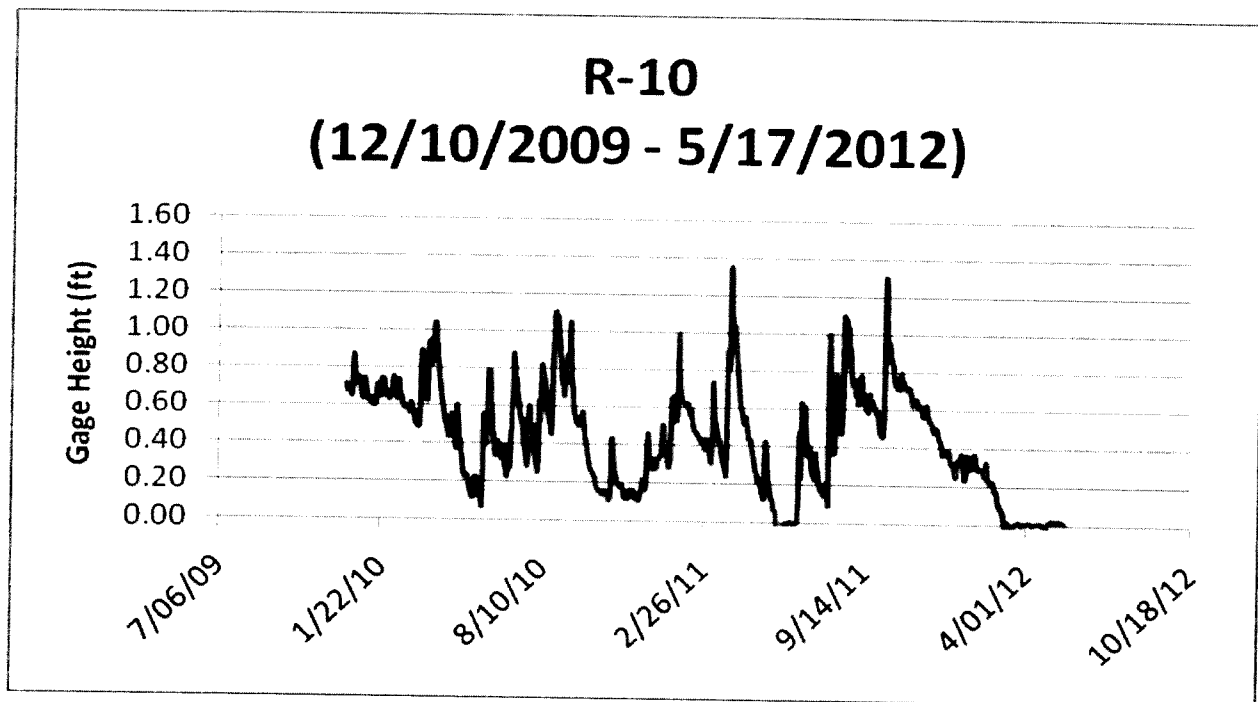


Figure 4 R-7 Hydrograph (12/10/2009 – 5/17/2012)

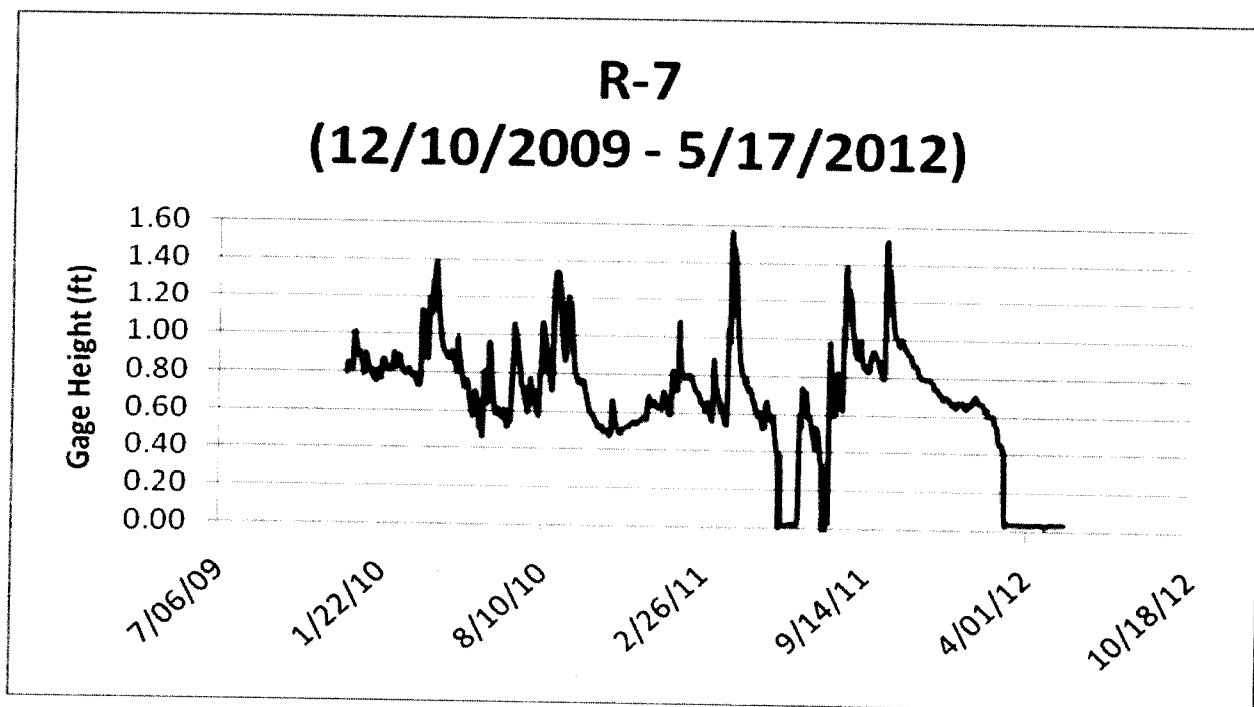


Figure 5 R-10 Hydrograph (12/10/2009 – 5/17/2012)

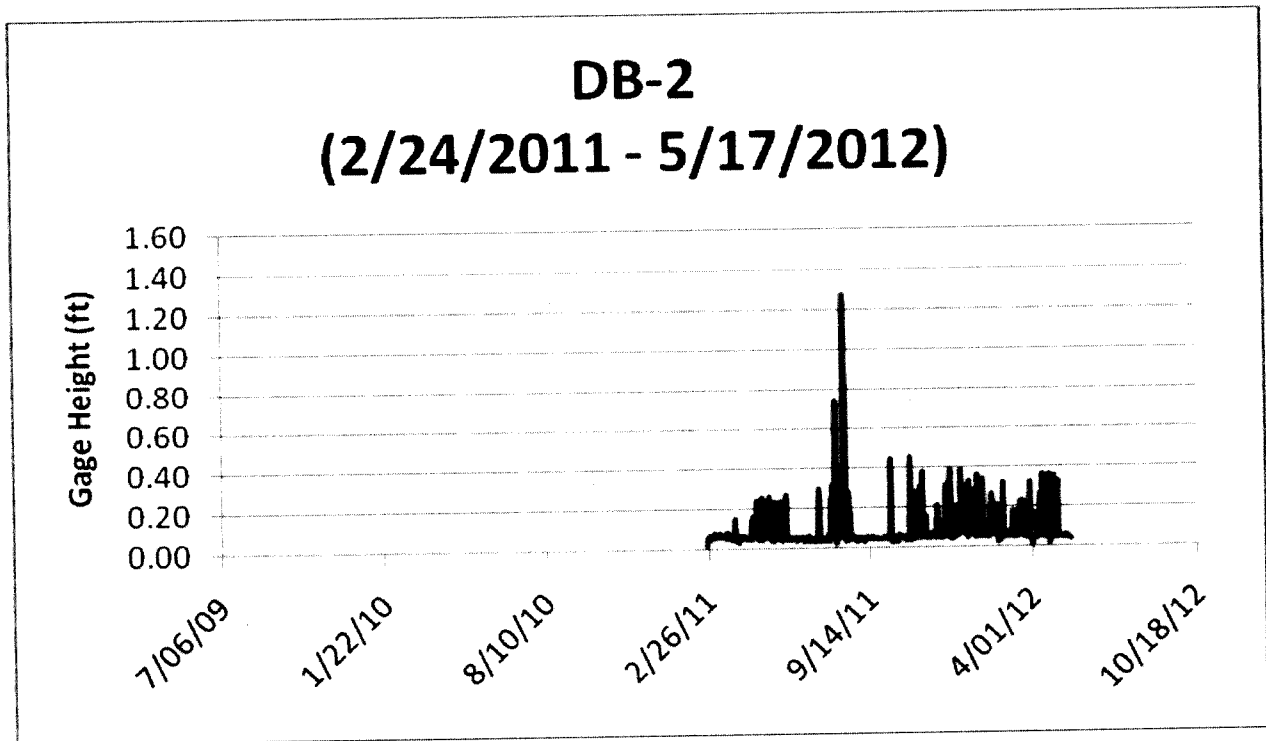


Figure 6 DB-2 Hydrograph (2/24/2011 – 5/17/2012)

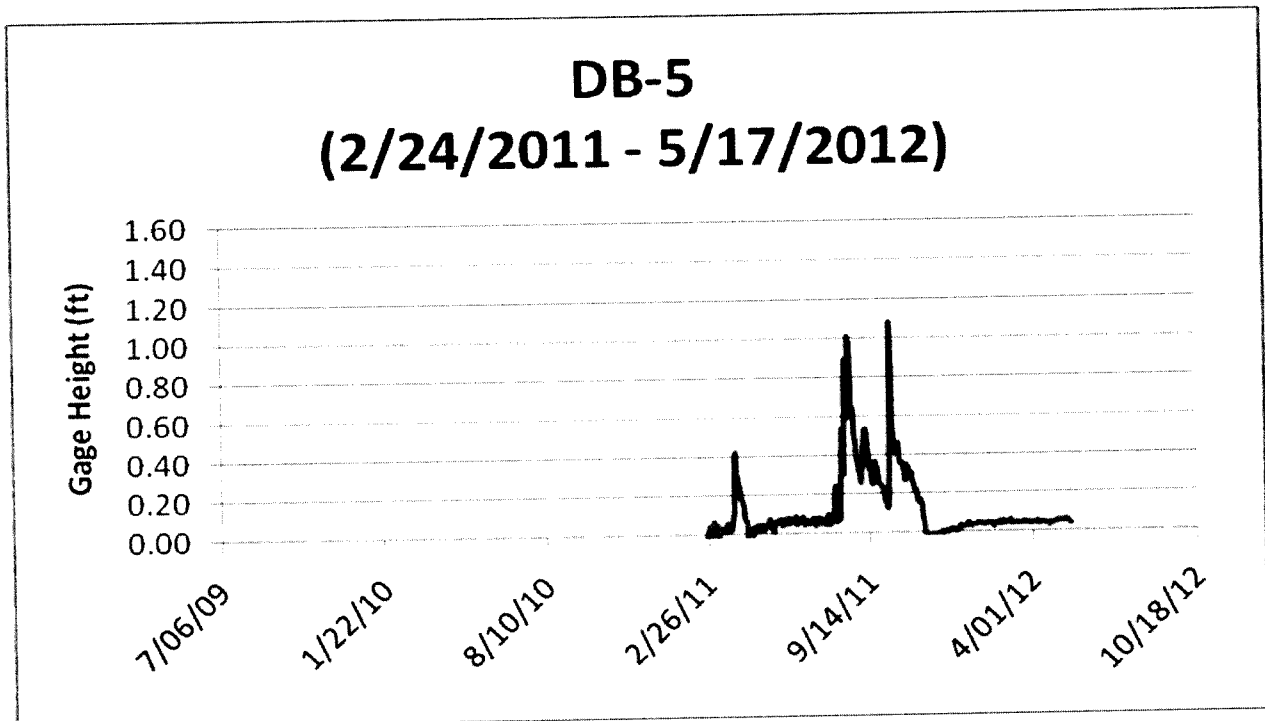


Figure 7 DB-5 Hydrograph (2/24/2011 – 5/17/2012)

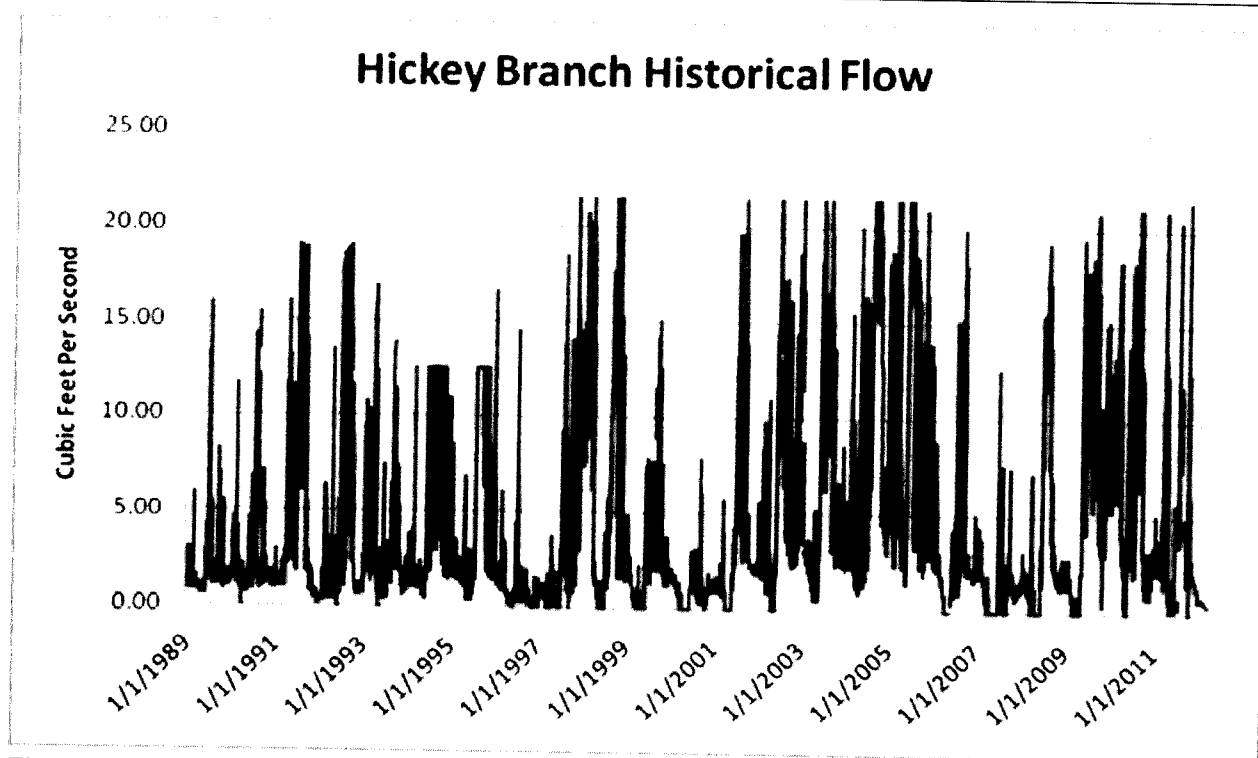


Figure 8 Hickey Branch Hydrograph (1/1/1989 – 3/31/2012)

Table 11 Zero Flow Days Comparison of Unmined Hickey Branch to Reference Sites

	Site Name	County	Physiography	Drainage Area (sq. mi)	Period of record	Average Zero Flow Days per Year
Comparison	Hickey Branch (unmined)	Hardee	Flatwoods	4.5	1989 – Present	25
Reference Sites (Peninsular Florida)	Cypress Slash UT	Polk	Highlands	0.37	Aug-08 - Present	322
	East Fork Manatee UT 2	Manatee	Flatwoods	0.39	Jul-08 – Present	252
	Grasshopper Slough Run	Highlands	Flatwoods	8.7	Jun-08 – Present	140
	Jack Creek	Highlands	Highlands	2.7	Jun-08 – Present	60
	Lower Myakka River UT 2	Sarasota	Flatwoods	2.7	Jun-08 – Present	242
	Lower Myakka River UT 3	Sarasota	Flatwoods	0.35	Oct-08 – Present	231
	Morgan Hole Creek	Polk	Flatwoods	11	Jun-08 – Present	104
	Moses Creek near Moultrie	St. Johns	Flatwoods	7.8	Apr-99 - Sept-02	13
	Tiger Creek UT	Polk	Highlands	0.93	Jul-08 – Present	6

2.2.4 Water Quality

Water quality parameters including temperature, pH, dissolved oxygen, conductivity, turbidity, nutrients, total organic carbon (TOC), total dissolved solids (TDS), total suspended solids (TSS), color, and iron concentration have been measured at R-7 and R-10 (FDEP, 2007) (Table 12). Dissolved oxygen (DO) measurements taken at both sites have shown values below the Class III minimum standard of 5.0 mg/L; however, this trend has also been observed at unmined sites (FDEP, 2007), as low-order systems generally have slower moving water and typically mimic and are often associated with headwater wetlands which can have naturally lower dissolved oxygen levels under healthy conditions. Further,

FDEP (2007) found that temperature, DO, nitrate, total phosphorus, and iron concentration did not differ significantly in reclaimed versus unmined streams. Turbidity, pH, specific conductance, and TDS, while found to be higher in reclaimed sites, consistently met Class III water quality standards assuring an appropriate designated use, while Ammonia, TKN, TOC, and color were higher in unmined sites. Water quality parameters have not been collected at DB-2 and DB-5 as these sites are not yet connected to their watersheds.

Table 12 Water Quality Parameters

Site Name	Date Sampled	Temp (°C)	pH	DO (mg/L)	Conductivity (µmhos)	Turbidity (NTU)	NH3 (mg/L)	NO3/NO2 (mg/L)	TKN (mg/L)	TN (mg/L)	TP (mg/L)	TOC (mg/L)	TDS (mg/L)	TSS (mg/L)	Color (PCU)	Fe (ug/L)
R7	10/19/1998	24.6	7.09	3.5	356	7.7	ND	0.01	0.73	0.74	0.59	16	ND	9	80	ND
	10/10/2001	22.9	7.4	4.7	442	ND	0.015	0.016	0.67	0.701	0.77	11	ND	ND	ND	ND
	8/26/2003	28.5	7.34	3.7	301	8.5	0.021	0.025	0.62	0.666	0.76	13	188	8	100	460
R10	10/8/2001	27.6	7.4	7.4	446	1.9	0.023	0.037	0.64	0.7	0.87	14	278	4	30	ND
	8/26/2003	29.6	7.45	4.8	334	3.5	0.021	0.017	0.63	0.668	0.75	13	200	6	80	334
	1/19/2005	17.6	7.65	ND	387	2.2	0.021	0.037	0.6	0.658	0.32	12	204	4	40	187

2.2.5 Fluvial Geomorphology

Fluvial geomorphology is the study of water-shaped landforms and the processes that create them. As previously discussed, the older Hickey Branch reclamation sites (R-7 and R-10) were created via natural hydraulic weathering. A detailed geomorphic survey was completed for both stream systems to assess facets such as riffle and pool spacing, slope, and sinuosity. Survey results indicated that slope and sinuosity fell within the range of natural Florida streams (though the sinuosity was on the low end) and that pools could be enhanced. As a result, structures such as wing deflectors, v-log weirs, and random large woody debris were installed to encourage the formation of bends and pools. Stream banks in both systems are stable, though additional plantings have been recommended for the banks.

Doe Branch reclamation sites DB-2 and DB-5 were natural channel designs heavily based on the principles of fluvial geomorphology; thus, riffle and pool spacing, slope, and sinuosity all fall within the range of natural Florida streams. Monitoring events have found that the banks are stable, with the exception of some damage caused by hogs and cattle. Routine maintenance flows are run through DB-2 to maintain the system, as it is not yet connected to its watershed and the hydraulic carving infrastructure is still in place.

2.3 Habitat Enhancement

In 1997, the CF Plant City Phosphate Complex (northeast Hillsborough County) was issued a permit to expand the stacking capabilities of phosphogypsum (a by-product of phosphate fertilizer production). As a part of the permitting requirements, a "Detailed Restoration Plan" was developed and subsequently approved by Federal, State and local agencies to provide mitigation for the loss of wetland function lost within the expansion footprint of the facility. This plan provided the framework for a 1,900-acre ecological restoration plan, which included 1,400 acres of wetland (700 ac.) and upland enhancement (700 ac.).

In its former condition, the site was dominated by improved pasture (FLUCFCS 211) used for cattle grazing and contained a series of ditches that resulted in dewatering of the onsite wetlands (FLUCFCS 640 and 621). The wetland enhancement was primarily completed through the addition of ditch blocks to rehydrate the dewatered wetland systems, the removal of cattle as well as other non-native flora and fauna, and the implementation of a monitoring and maintenance program. The uplands enhancement efforts focused on restoring pine flatwoods (FLUCFCS 411) and mixed forest (FLUCFCS 434) communities at the site.

The initial steps in the upland enhancement effort concentrated on the elimination of pasture grasses through both mechanical means, such as harvesting sod and disking, and herbicide treatments of nuisance vegetation. Upon eradication of the pasture grasses, efforts focused on establishing native habitat, which was completed by a combination of seeding with native upland species of grasses and forbs and subsequent plantings of trees and woody shrubs.

As a part of the upland enhancement plan, CF implemented a combination of unique, intensive management efforts, including the aforementioned site preparation to eliminate pasture grasses prior to planting native ground cover seed. For the first year following seeding, the upland habitats were actively monitored and managed. Based on the results of the monitoring, the management plan requirements were adapted to address site specific needs, typically consisting of spot treatments to address non-native grasses. Once the upland groundcover became established, a management regime termed "light maintenance" was applied which focused on limited herbicide treatments and application of prescribed fire. The installation of trees and woody shrubs were delayed until a restoration site has reached the lighter maintenance stage, often 2 years post seeding and only after the site can successfully carry a growing season fire. Using this methodology, the upland enhancement efforts implemented by CF have been highly successful, with over 70 percent of the upland acreage released from further monitoring and maintenance requirements, and the remaining acreage, which was seeded in 2009, is scheduled to be released in 2013. A summary of the permit success criteria and the status of the enhancement efforts are presented in Table 13. Lessons learned during the conversion of upland habitats from improved pasture to pine flatwoods will be applied where appropriate in CF's mining operations and ultimately should reduce the time period associated with analogous enhancement efforts within the no-mine areas of the SPE site.

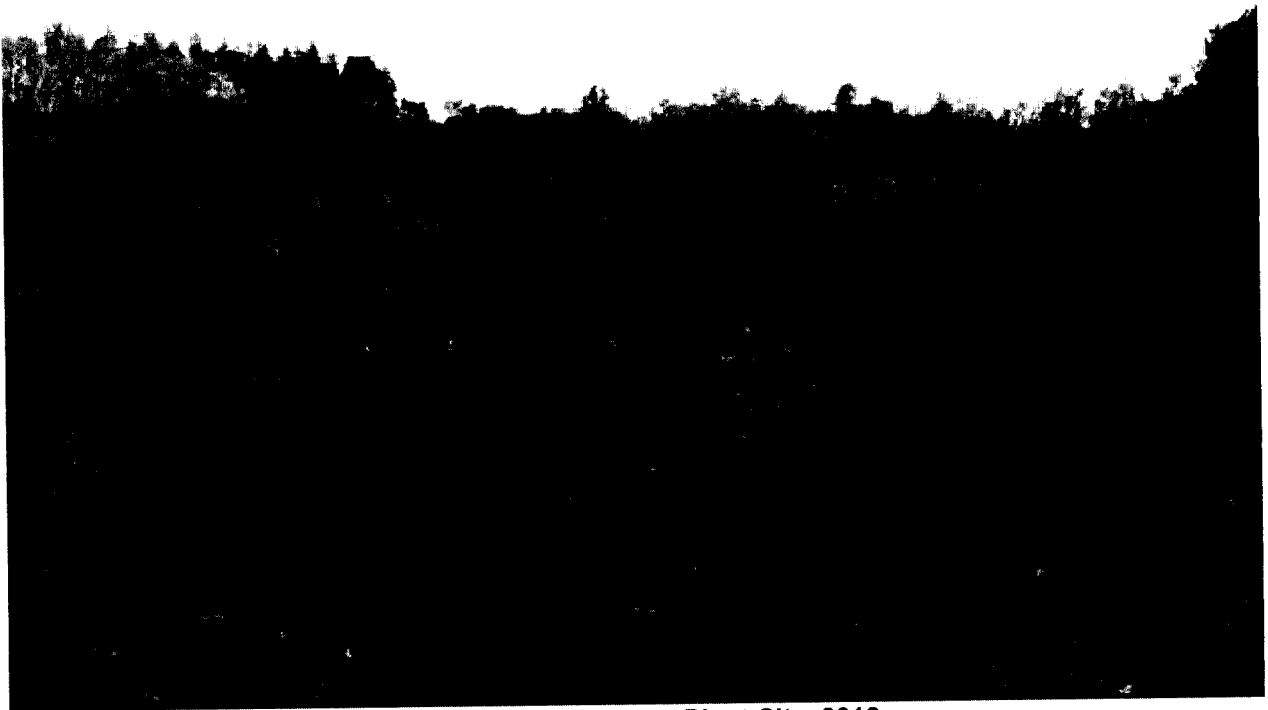
Ongoing wildlife monitoring has been conducted in the enhancement areas since 2001. The results of these surveys have documented up to 72 different species utilizing the enhanced habitats, including Anhinga (*Anhinga anhinga*), limpkin (*Aramus guarauna*), great egret (*Ardea alba*), red shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), northern bobwhite (*Colinus virginianus*), little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*), common moorhen (*Gallinula chloropus*), sandhill crane (*Grus canadensis*), least bittern (*Ixobrychus exilis*), mourning dove (*Zenaida macroura*), northern cricket frog (*Acris crepitans*), green treefrog (*Hyla cinerea*), squirrel treefrog (*Hyla squirella*), bullfrog (*Rana catesbeiana*), and pig frog (*Rana grylio*). Several species of mammals were also noted including white-tailed deer (*Odocoileus virginianus*), nine-banded armadillo (*Dasypus novemcinctus*), and marsh rabbit (*Sylvilagus palustris*).

Table 13 Upland and Wetland Habitat Enhancement Success Criteria Status Based on 2012 Monitoring Report

	Enhancement area is dominated by native, desirable species and exotic and nuisance vegetation less than 10 percent.	700	700	completed/ released
	Enhancement area is dominated by native, desirable species representative of a pyrogenic community, ecologically significant increase in wildlife utilization, and exotic and nuisance vegetation less than 10 to 25 percent (varies by management unit).	700	500	140 acres in 2012, 60 acres in 2013
		1,400	1,200	



Upland enhancement, Plant City, 2012



Upland Enhancement, Plant City, 2012



White-tailed Deer, Plant City, 2012

3 Summary

CF Industries has a history of consistently improving wetland reclamation/mitigation and habitat creation and enhancement efforts beginning in the late 1970s and still continuing today. CF employs proven modern, and in some cases innovative, scientific and technical methods, encompassing planning, ecological and engineering design, modeling, construction, maintenance and monitoring. As discussed above, these methods and the continuing reclamation refinements allow CF's mitigation wetlands to rapidly achieve functional replacement (as well as acreage replacement) of impacted wetlands. One indicator of this is the fact that the average UMAM score of wetlands reclaimed by CF, but not yet released from monitoring and maintenance requirements, is 0.63, which is a greater level of wetland function than the UMAM average of the areas proposed for impact in the South Pasture Extension (0.52). As these sites continue to mature, it is expected that their UMAM scores will continue to increase. For example, CF's oldest reclaimed wetlands in the Hickey Branch system provided an average score of 0.73, despite being designed prior to more modern approaches. The more modern approaches will help CF's future reclamation achieve their goals more quickly.

Reclamation of streams, including R-7, R-10, DB-2, and DB-5, clearly demonstrate CF's ability to create streams with habitat availability, biota, hydrology, water quality, and fluvial geomorphology functions analogous to natural Florida streams. On average, the streams proposed for impact on the SPE are of lower habitat quality than streams that will be preserved and lower than the aforementioned stream reclamation sites (Figure 8). Streams proposed for impact consist predominantly of small headwater streams that have been historically adversely impacted by agricultural practices such as ditching and grazing. CF's proposed stream reclamation plan will restore streams to a more pre-disturbance condition, thus providing an environmental benefit to the property and the local watershed. Finally, CF's demonstration of successful upland and wetland habitat enhancement provides additional support that

these enhanced communities will act to protect and improve ecological function of the preserved stream systems and planned habitat corridors.

The widely-recognized expertise held by CF staff and its consultants in the hydrology and ecology of wetland and upland restoration on mined and preserved lands has been marshaled to achieve a consistent level of success in creating highly functional and permanently protected ecosystems on the company's property. CF has a proven track record of commitment to excellence in ecological stewardship, creating self-sustaining wildlands with water quality, hydrology, and habitat structure supportive of diverse native flora and fauna. The results are consistently thoughtful and quantitative planning, careful and creative construction techniques, and diligent management. On-site permittee-responsible mitigation within the industry is conducted on a watershed scale and serves to replace functions of lost wetlands, as well as improve functions of areas preserved within individual mines. The information compiled here demonstrates CF's exemplary record of creating successful mitigation, which can be expected to continue with further success and evolutionary improvements on the SPE.

Boxplots Comparing Stream Habitat Scores at a Phosphate Mine

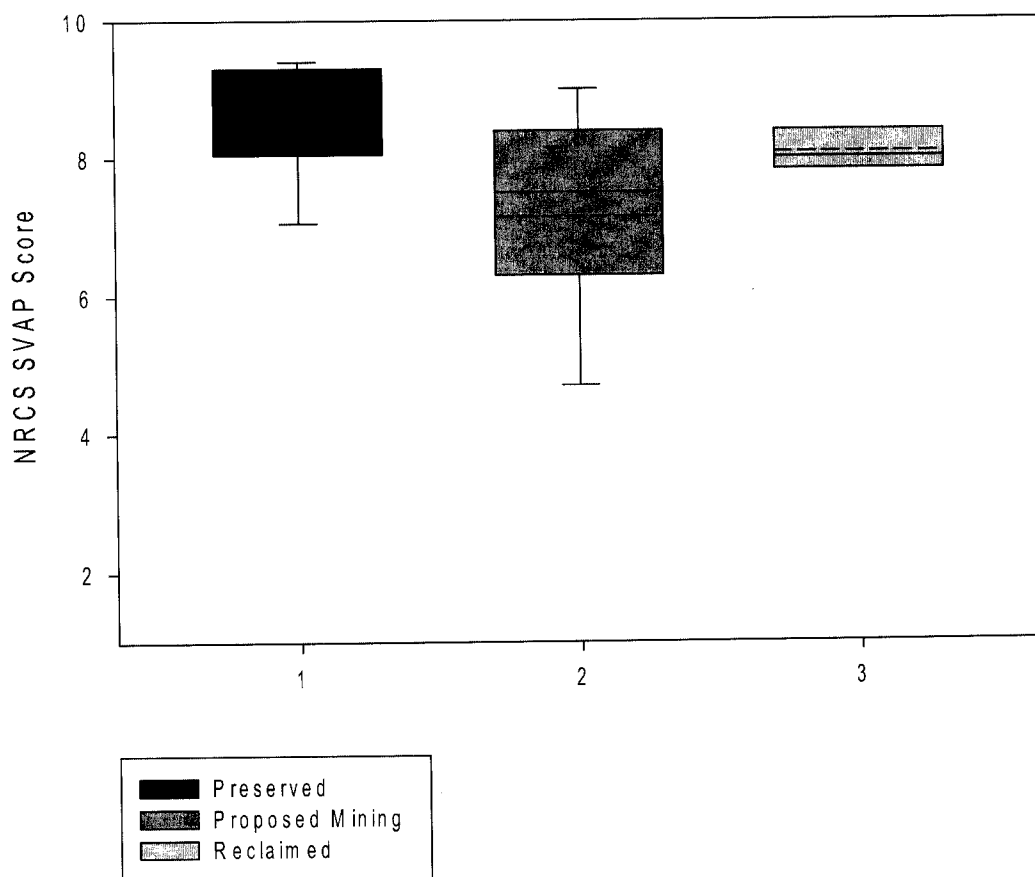


Figure 9 Boxplots Comparing Stream Habitat Scores at CF's South Pasture Extension to CF's Reclaimed Streams

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APPENDIX

A

LAND USE MAP PACKAGE

620

Reclamation Parcel R-10

430

430

430

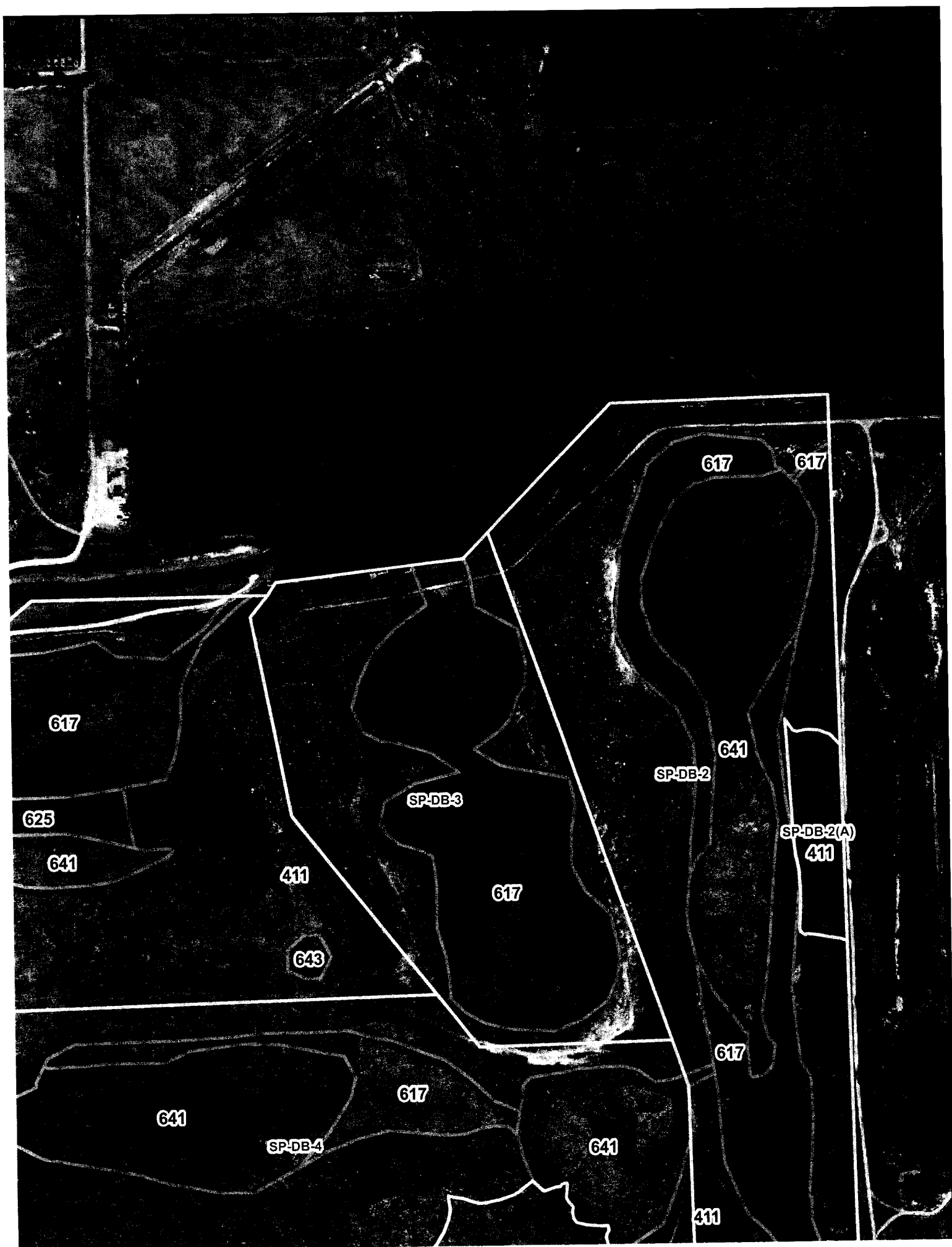
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430

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Reclamation Parcel R-7





Reclamation Parcel BC-2

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Reclamation Parcel BC-3

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Reclamation Parcel HC-1

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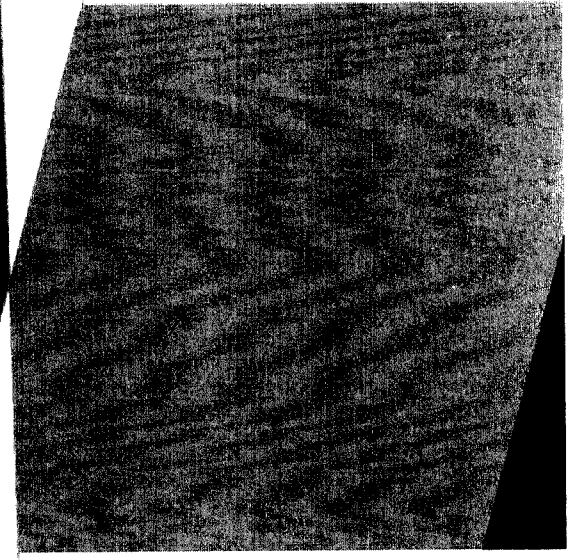
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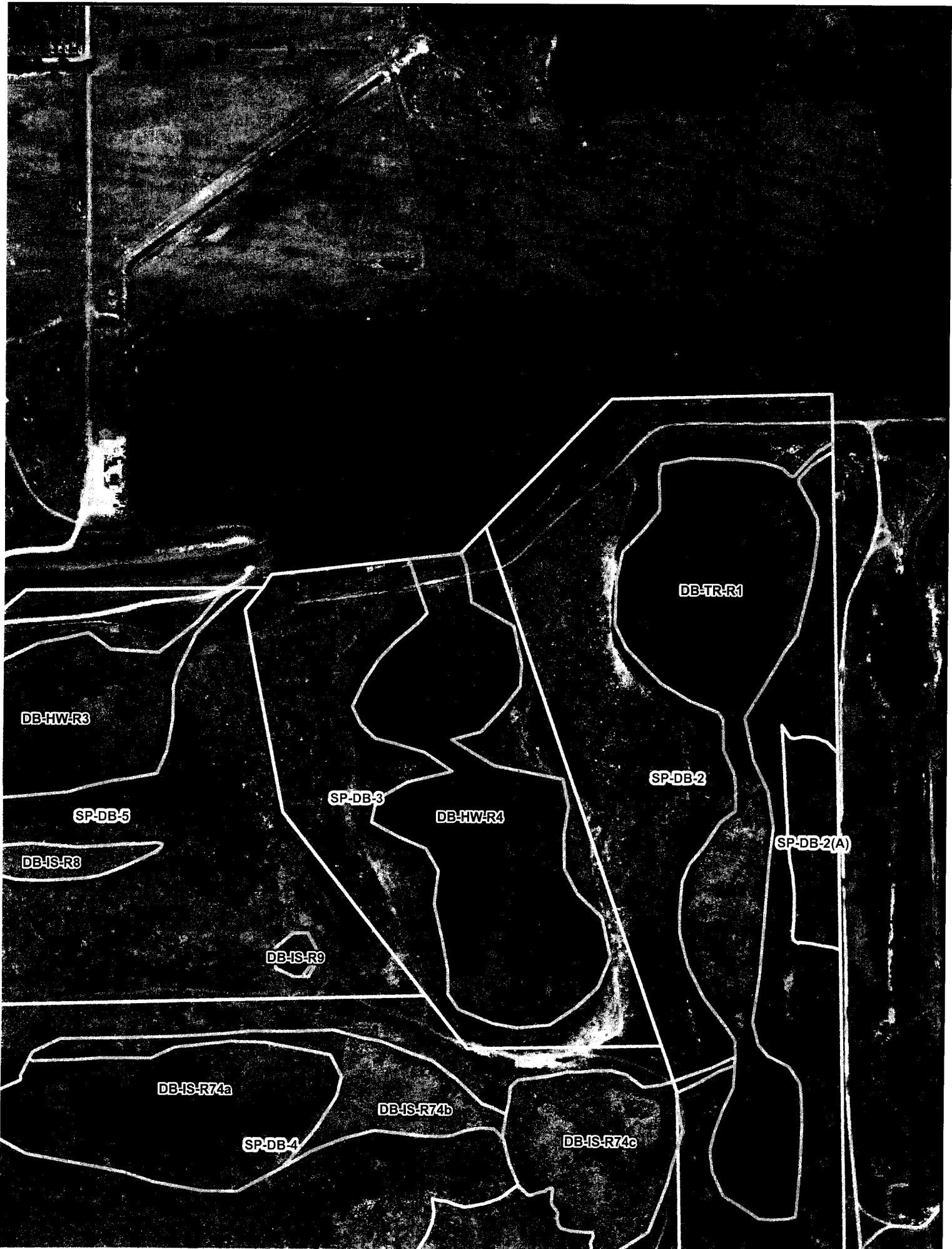
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APPENDIX

B

WETLAND MAP PACKAGE





DB-HW-R3

SP-DB-5

DB-IS-R8

DB-IS-R9

DB-IS-R74a

SP-DB-4

DB-IS-R74b

DB-IS-R74c

DB-HW-R4

SP-DB-3

DB-TR-R1

SP-DB-2

SP-DB-2(A)





BC-HW-R2

Reclamation Parcel BC-3

BC-IS-R61

BC-HW-R1B

BC-HW-R1A

BC-IS-R63

HC-IS-R8

Reclamation Parcel HC-1

HC-IS-R10

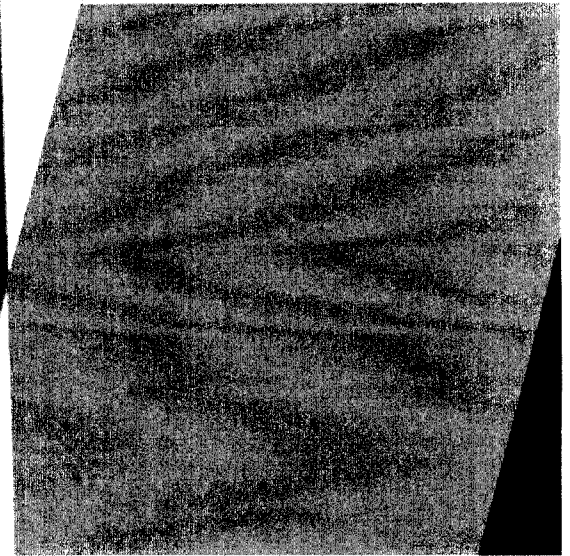
HC-IS-R5

HC-IS-R11

APPENDIX

C

DOE BRANCH AND BRUSHY CREEK
RECLAIMED WETLAND HYDROLOGY
ASSESSMENT



DOE BRANCH AND BRUSHY CREEK RECLAIMED WETLAND HYDROLOGY ASSESSMENT DECEMBER 2012

Prepared by CF Industries, Inc.

Monitoring Network Description and Purpose

Pursuant to South Pasture Mine WRP 252607909, Specific Condition 7(e), CF has implemented a Post-Contouring Hydrology Assessment Plan to determine whether the hydrology of reclaimed DEP jurisdictional wetlands is suitable to support the desired wetland type. The plan consists of installing piezometers in the uplands adjacent to the wetlands and installing a piezometer with data logger in the deepest portion of the wetland. The piezometers are installed in the uplands using a truck-mounted rotary drill rig to a depth of approximately 20 feet, are manually read on a weekly basis using a tape-type water level meter, and the readings are stored in an Access database. The piezometer/data logger is installed using a hand auger to a depth of approximately five feet, and the data logger is set to automatically record the water level in the piezometer twice a day, the data loggers are downloaded on a monthly basis, and the readings are stored in an Excel spreadsheet. For the purpose of this analysis, the data logger readings were averaged for the weekly period of Sunday through Saturday. Currently, CF has implemented the Post-Contouring Hydrology Assessment Plan for DEP jurisdictional wetlands BC-HW-R1 and BC-HW-R2 located in reclamation parcel BC-3; wetland DB-TR-R1 located in reclamation parcel DB-2; wetland DB-HW-3 located in reclamation parcel DB-4; wetland DB-HW-R4 located in reclamation parcel DB-3; and wetland DB-IS-R74 located in reclamation parcel DB-4. The Post-Contouring Hydrology Assessment Plan is not required by the Corps permit for the South Pasture Mine.

Period of Record and Rainfall

CF has collected onsite rainfall data since August 2000 using a standard rain gauge located at Latitude 81°56'27.60" West, Longitude 27°35'20.40" North. Historic data were obtained from the National Resource Conservation Service (NRCS) website for the Wauchula Weather Station, located in Wauchula, Florida. The weather station is located approximately 8 miles east of the South Pasture Mine. The data consist of monthly rainfall amounts for the years 1961 through 1997 and were used to calculate monthly averages for that time period.

Historic average monthly rainfall was compared with onsite average rainfall, and the accumulated deficit/excess rainfall calculated and is depicted in Figure 1-1. The accumulated deficit/excess in rainfall indicates that from July 2005 through September 2012, there was a deficit of approximately 66 inches of rainfall at the Hardee Phosphate Complex.

Site Descriptions and Results

The purpose of this data review was to determine the adequacy of groundwater support for several wetlands reclaimed in different hydrogeomorphic configurations and to support forested and non-forested communities at CF's South Pasture Mine. The sites were constructed in accordance with three different approaches to hydrologic design. The seven sites represent a variety of times since reclamation, and vary in the status of their watershed completion.

Wherever possible, CF uses a conceptual analogue design approach. Such an approach first identifies the hydrogeomorphic setting of pre-mining wetlands (e.g. headwater depression, flow-through slough, chain-of-depressions, riparian (stream) corridor) as a stratifying variable for then seeking key topographic relationships between the wetland depression, its upland hillslopes, and outflow elevations. Ideally, the

pre-mining topography would simply be re-established, but this ideal is rarely available. Therefore, key associations are identified by wetland type between wetland outflow elevations and seasonal-high water upstream of the wetland outlet, ratios of watershed to wetland acreage, depth below seasonal high water, and lateral land surface gradients between the upland hillslope and wetland edge. In other words, we identified topological and topographic associations with the gamut of pre-mining wetland types on the property and set to design systems with analogous associations as close as mining logistics and reclamation materials would allow. This procedure is described in detail in CF's original joint WRP/CRP Dredge and Fill application from 1994 and with its current refinements in CF's ERP/Dredge and Fill application currently under Federal review for the South Pasture Extension. Specifically, please refer to the SPE Stream Restoration Plan (Appendix EN-3 of the SPE Environmental Narrative) and the SPE Integrated Modeling Report (Appendix 3 of the Reclamation Plan) for the proposed design approach for SPE reclamation streams and wetlands.

In most cases, the design was also driven based on the results of integrated groundwater/surface water numerical modeling. The models were used to generate synthetic daily water elevation levels for a period of an approximately 20 years. The synthetic record was then used to calculate seasonal high water (SHW) as the terrestrial boundary at which a 15% percent exceedance of the long term daily water level record occurred. This provides a water level with a hydroperiod of a little less than two months at the designed wetland edge. For systems not explicitly modeled, the design SHW was defined as the elevation prevailing along the wetland edge. Because none of the sites in this analysis were designed as seepage slopes, SHW was consistently viewed as the routine heights to which surface water rises during a normal wet season. For that reason, the seasonal high groundwater table (SHGWT) may or may not reach similar levels as SHW. For example, runoff from many wet-season storms will drive up surface water levels higher than the water table.

The adequacy of the hydrology was assessed by examining the water table fluctuations occurring during a period of record of one to two years in a network of shallow monitoring wells set in the surficial aquifer at positions within or near the wetlands. In addition to water table elevations, the network allows the general direction of the groundwater gradients from uplands to wetlands and between wetlands to be assessed. The monitoring well data represents SHGWT levels that are generally expected to range from several inches below SHW up to SHW. Because the monitoring record was of short duration, it could not be reliably assessed using the 15% exceedance approach used in design, which was based on a long-term record. Instead, we used the elevation concordant with the 85% exceedance level occurring during the wet season. That approach is similar to that used by the Southwest Florida Water Management District to assess potential groundwater threshold effects of mining at South Pasture Mine as part of its groundwater drawdown protocol (CF's approved South Pasture Environmental Monitoring Plan submitted to the Corps on December 22, 2011 as part of the ongoing DAEIS review). Furthermore, it provided SHGWT levels that gave good visual accord with the apparent central tendency of the wet season fluctuations on the hydrograph, particularly during the single non-drought wet season in the monitoring record.

Brushy Creek Flow-Through Wetlands

The BC-HW-R2 and BC-HW-R1 sites are montages of forested and non-forested wetlands reclaimed through initial revegetation during 2010. The sites were designed to be flow-through systems, functioning as sloughs or strands with sporadic, slowly flowing water. They are close to the headwater position of the watershed and were designed to occupy a transitional position between large headwater depressional wetlands and a downstream preserved riparian wetland and stream corridor. BC-HW-R2 forms the southern leg of a headwater wetland complex yet to be constructed, and it drains to the south into BC-HW-R1. BC-HW-R1 will ultimately drain to a downstream preserved wetland to the south, but is currently isolated from it by a perimeter ditch and berm. The subject wetlands are complete, but approximately 2 square miles of their watershed remain to be reclaimed. Both sites are currently ringed by a re-route ditch to their north and east, active mining to the north, an active sand-clay mix impoundment to the west, and natural ground to the south. The natural ground is downgradient (at lower elevation) of the reclamation.

Therefore, the current source water to the reclaimed groundwater table is predominantly rainfall interacting with reclaimed land. The general north-to-south drainage pattern is by design, and is analogous to that of the pre-mining landscape. Accordingly, the design groundwater gradient is generally from the north to the south, following the long axis of the reclaimed slough. Lateral groundwater movement is also expected to occur from the reclaimed uplands into the reclaimed wetlands.

The design SHW of BC-HW-R2 was 116.0 feet NGVD based on the results of an integrated groundwater-surface water model simulation using the MIKE SHE software package, published in 2009. The same simulation was used to predict SHW elevation of 114.2 feet NGVD for BC-HW-R1. The monitoring data shows SHGWT elevations of 116.2 feet and 113.6 feet NGVD for BC-HW-R2 and R1 respectively. These values compare quite favorably to the design objectives, especially considering that 86 percent of the sites' watershed has yet to be reclaimed and connected. The upland and ecotone piezometer show about 3 feet of annual fluctuation, which is within regional norms for natural ground in the flatwoods. The upland piezometers also show good positive gradient toward the reclaimed wetlands, and the desired north to south gradient has been established. Fluctuations within the wetland piezometers also appeared to be within natural seasonal normsⁱ.

Doe Branch Headwater Wetlands

The DB-HW-R4 and DB-HW-R3 sites were designed to be forested, depressional headwater swamps, draining across short outlets to a preserved in-line swamp depression to the north. The sites are approximately ten and four years old, respectively, since initial planting. Currently, water from DB-HW-R4 reaches the preserve via a temporary drop structure and culvert. The structure will be replaced by a vegetated, earthen sill mimicking natural wetland outlet geomorphology, with its crest dimension and width providing hydraulic equivalency to the existing temporary structure. DB-HW-R3 currently drains over just such a vegetated earthen sill into a reclaimed stream valley.

DB-HW-R4's watershed is complete and is comprised of 100% reclaimed land. It is bordered by reclaimed drainage divides to the west, south, and east, with a downgradient preserved wetland to the north. DB-HW-R3 is currently supplied by water from its 0.3 square mile reclaimed watershed, which is ringed by a return water ditch to the west, a reclaimed drainage divide to the south and east, and an NPDES outfall ditch to the north. The system was designed to receive an additional 0.2 square miles of contributing area, which has yet to be mined and is currently isolated from it by the NPDES ditch. Both systems receive water predominantly from rainfall interacting with reclaimed land, as designed. Further, both systems provide general drainage patterns and hydrogeomorphic associations analogous to those of the pre-mining landscape.

The design SHW of these sites was based on an integrated groundwater-surface water model using the ISGW software code. This code was an early derivative of what is now known as the FIPR Hydrology Model (FHM) administered by the University of South Florida. CF published the results of this modeling effort in its 1994 Dredge and Fill application for the South Pasture Mine. The model results were used to predict SHW of 97.5 feet NGVD for DB-HW-R4 and 103.3 feet NGVD for DB-HW-R3. Monitored SHGWT results were 97.3 feet NGVD and 103.1 feet NGVD for these sites, respectively. Upland piezometers exhibited a range of fluctuation that is within regional norms for natural ground in flatwoods and mesic-hammocks, and indicated positive lateral groundwater flow gradients to the reclaimed and preserved wetlands as designed. Fluctuations within the wetland piezometers also appeared to be within natural norms.

The DB-IS-74 West and East sites form a headwater chain of wetlands designed to drain to a reclaimed strand (DB-TR-R1). These sites were designed without the use of integrated modeling, relying entirely on geomorphic analogue tactics and were constructed during 2007. Basically, these wetlands occupy a position very similar to a premining system at the same location, and that system's topography was largely mimicked in the design. The pre-mining system was not pristine, with its drainage outlet altered by a ditch that was omitted from the final design. Accordingly, the system was constructed to provide a natural earthen sill and meandering stream channel at its outlet.

The predicted SHW (wetland edge) was 101.3 feet NGVD for the West lobe and 100.0 feet NGVD for the East lobe. The monitored SHGWT elevations are 101.4 feet NGVD and 99.7 feet NGVD respectively, well within expected ranges of the design. Both sites show groundwater table fluctuations and gradients in accordance with design direction and land use objectives.

Doe Branch Flow-Through Swamp

The DB-TR-R1 site was designed to provide a nearly mile long, semi-lotic strand with a rather gentle and constant land surface gradient from south to north. This strand was designed to join a reclaimed upland and headwater complex of about 3.8 square miles to a reclaimed stream valley connecting to the Doe Branch preserve. About 3.5 square miles of this watershed is currently under active mining operations and is yet to be reclaimed and reconnected. The system receives its water from rainfall interacting with reclaimed lands.

The design SHW was calculated using the same 1994 ISGW integrated model simulation as that used for DB-HW-R4 and R3. Design SHW was 94.0 feet NGVD at the system's outlet lobe adjacent to its receiving stream valley. The monitored SHGWT elevation is also 94.0 feet NGVD. The adjacent piezometers in reclaimed uplands show appropriate seasonal fluctuation with strong positive gradients laterally toward the reclaimed strand. The designed dominant south-to-north groundwater table gradient toward the wetland preserve also occurred as conceived. Water table fluctuations within the wetland are within acceptable ranges for the desired vegetative community.

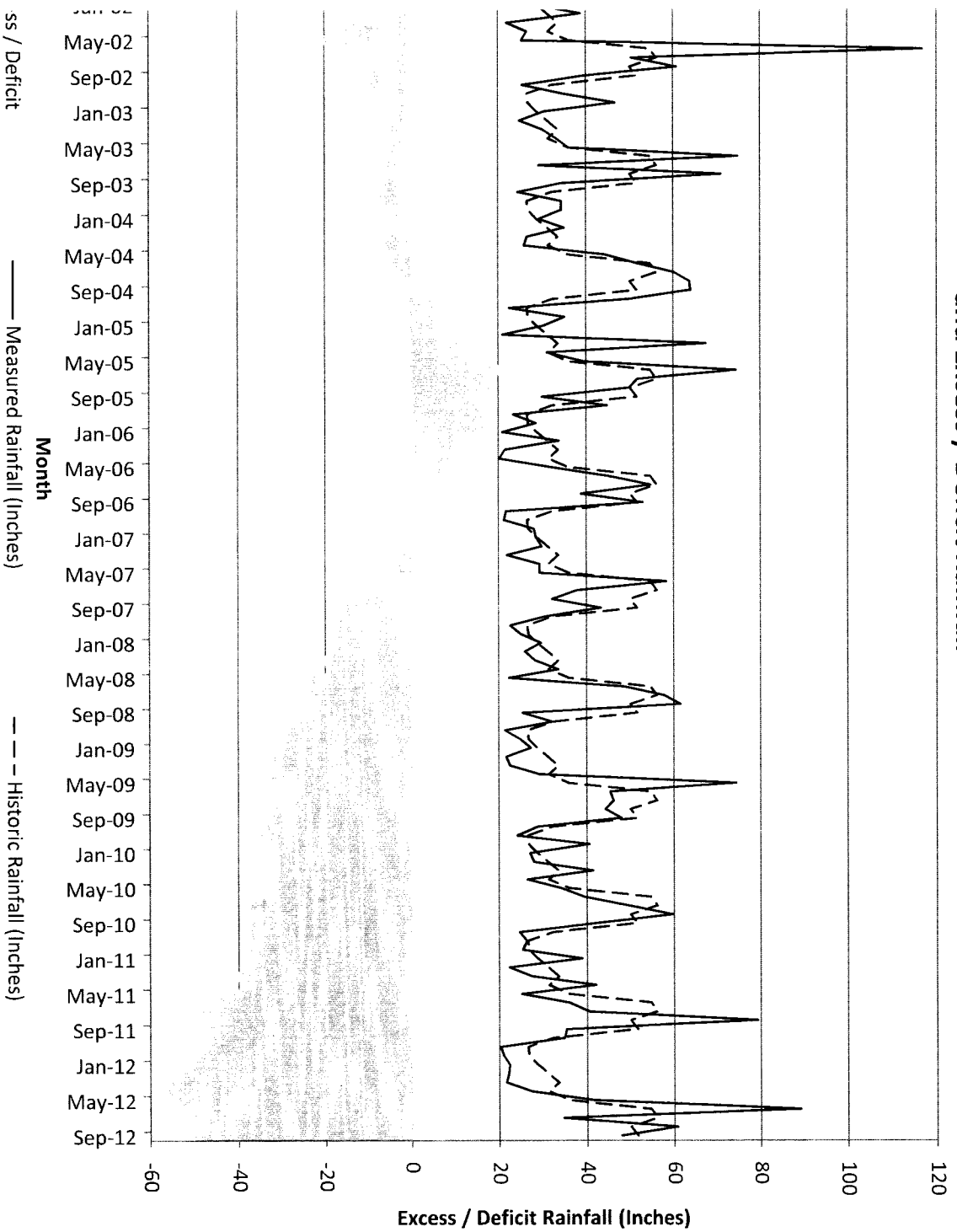
Conclusions

The analogue design approach and integrated groundwater-surface water modeling provide a powerful design tool combination readily and consistently establishing groundwater table regimes supportive of wetland water table elevations under a variety of hydrogeomorphic settings, including depressional headwaters, semi-lentic sloughs, and semi-lotic strands, appropriate for both herbaceous and forested wetland types. The groundwater table is readily re-established, even in projects less than 2 years old and with only partial watershed completion. The only fully-completed project in the group (both the wetland and its surrounding watershed have been completely reclaimed) exhibited a rather exacting match between predicted and monitored wet season water table elevation. When all sites are considered in combination, the amount of inter-annual fluctuation during a combined drought and wet cycle suggests excellent and inherently rapid responsiveness of these reclaimed systems to adequate rainfall. All seven systems appear to be performing well and within tolerance levels indicative of the potential for long-term, self-sustaining success, based on their groundwater table data. Design assurances resting on an assumption that groundwater tables are recoverable through onsite reclamation appear to be robust and highly reliable. This finding is consistent with the results of CF's integrated surface water/groundwater modeling. Integrated modeling appears to provide a nice quantitative compliment to the company's conceptual design approach using hydrogeomorphic analogues to natural systems.

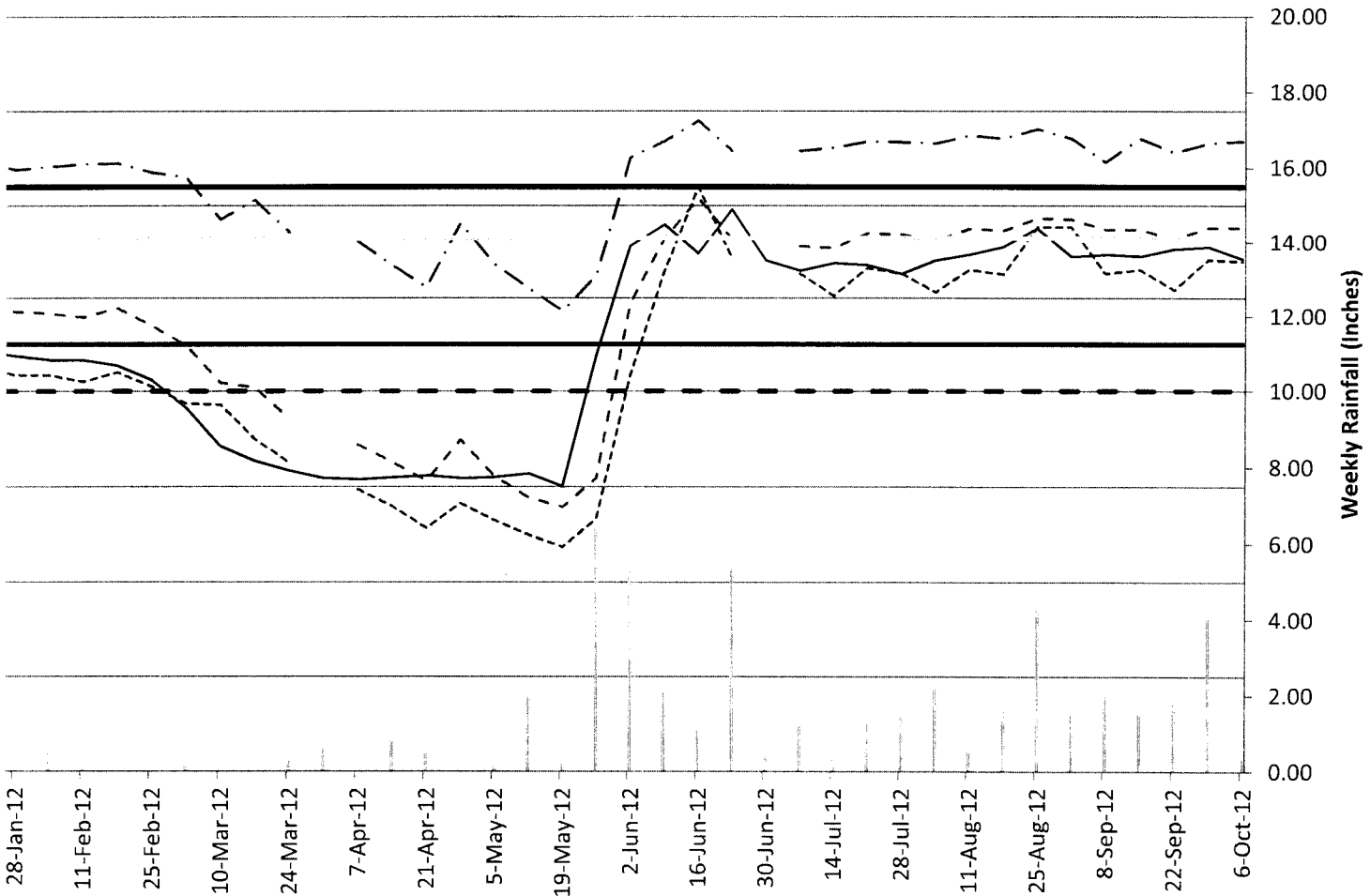
ⁱ Examples of regionally-applicable, natural-system water level fluctuations can be found in

- Tighe, R.E. and M.T. Brown. 1991. *Hydrology of Native Florida Ecosystems*, in Brown, M.T. and R.E. Tighe (Eds) *Techniques and Guidelines for Reclamation of Phosphate Mined Lands*. Florida Institute of Phosphate Research Project #83-03-044. Bartow, FL. pp. 6:1-33.
- Lewelling, B.R. 1997. *Hydrologic and Water-Quality Conditions in the Horse Creek Basin, West-Central Florida, October 1992-February 1995*. U.S. Geological Survey WRI Report 97-4077. Tallahassee, FL. 72 p.

and Excess / Deficit Rainfall



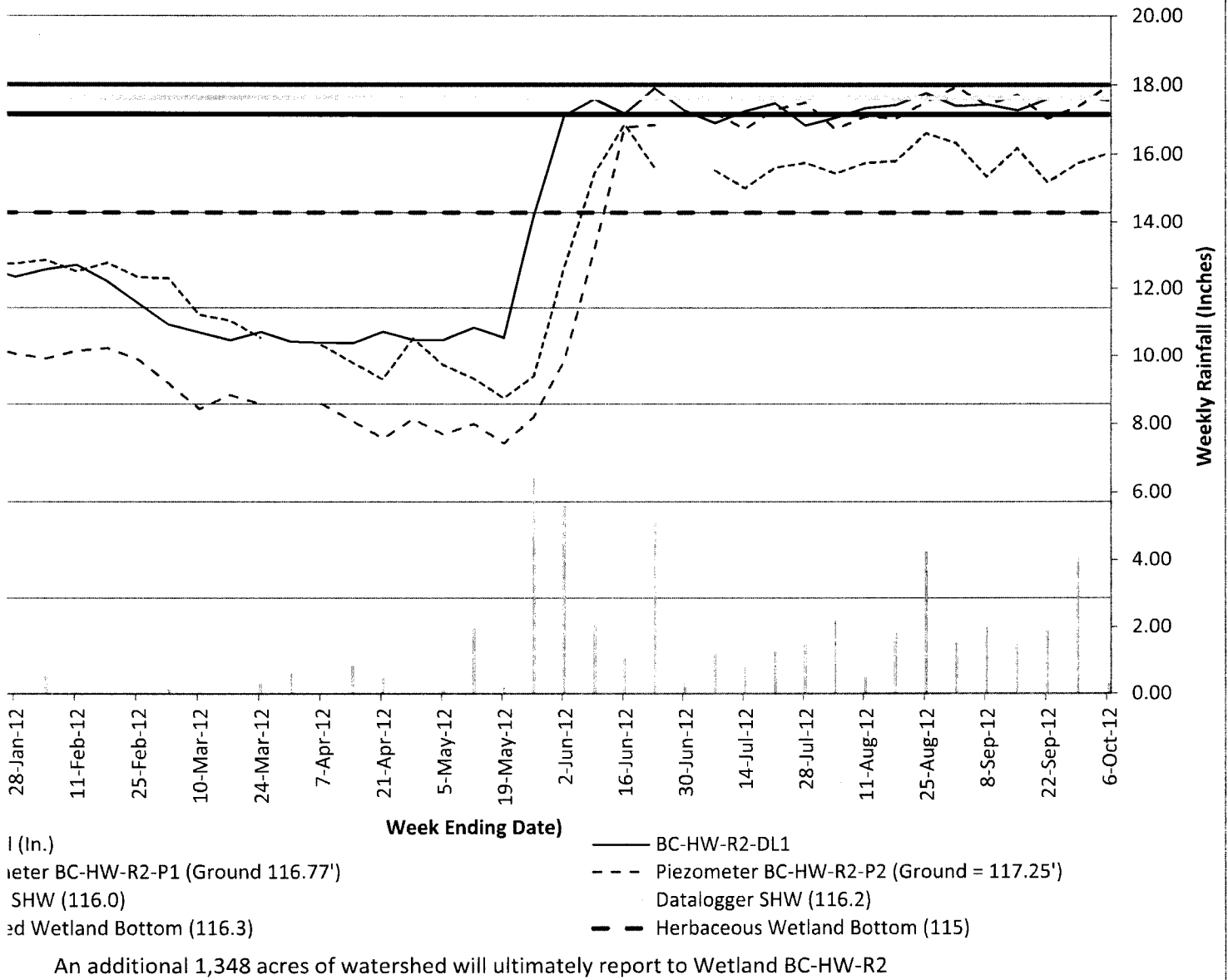
Reclamation Parcel BC-3 Wetland BC-HW-R1

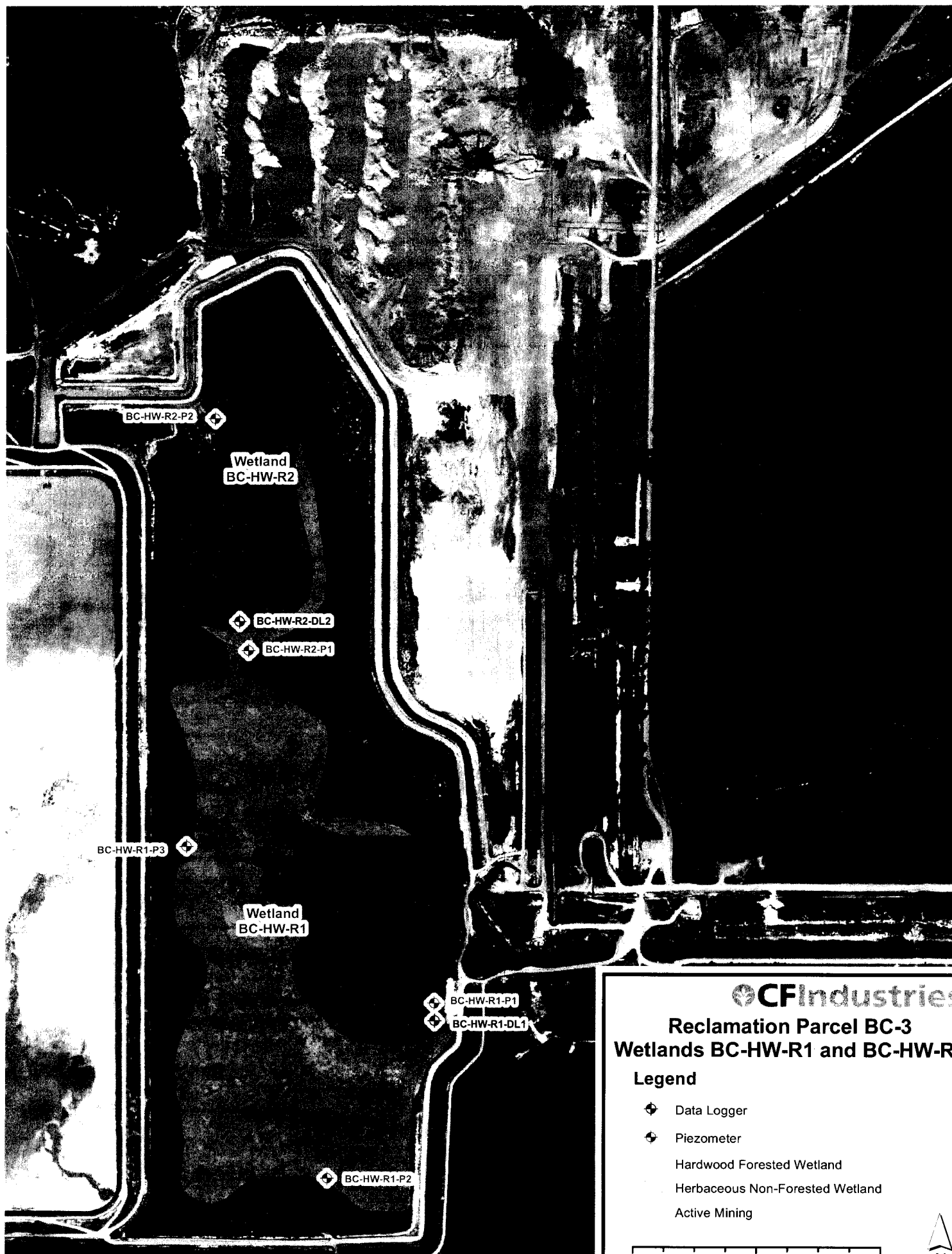


l (In.)
 ieter BC-HW-R1-P1 (Ground = 114.36')
 ieter BC-HW-R1-P3 (Ground = 115.01')
 gger SHW (113.6)
 eous Wetland Bottom (112.0)
 n additional 1,434 acres of watershed will ultimately report to Wetland BC-HW-R1

— BC-HW-R1-DL1
 - - - Piezometer BC-HW-R1-P2 (Ground = 113.87')
 — Design SHW (114.2)
 — Forested Wetland Bottom (112.5)

Reclamation Parcel BC-3 Wetland BC-HW-R2





CF Industries

**Reclamation Parcel BC-3
Wetlands BC-HW-R1 and BC-HW-R2**

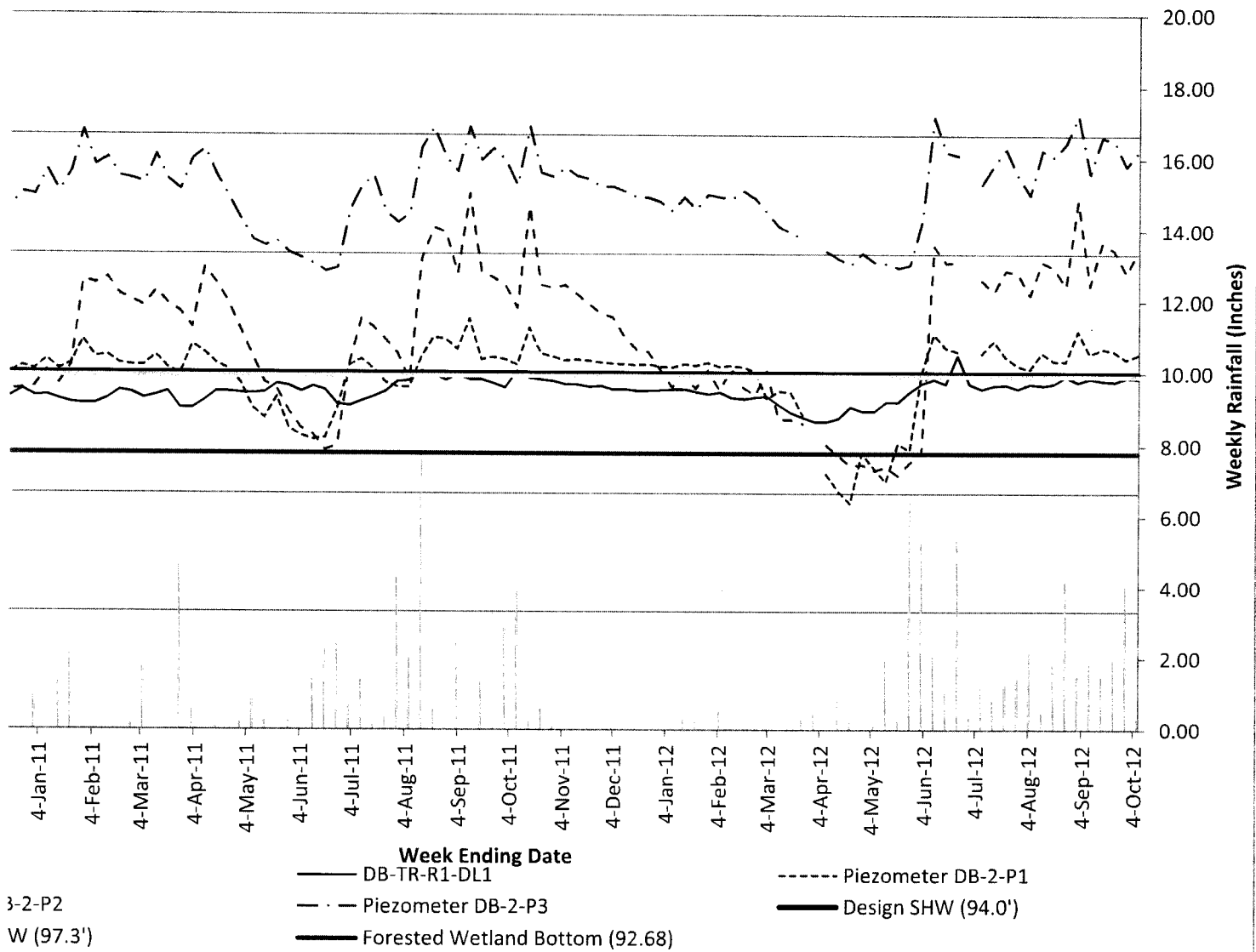
Legend

-  Data Logger
-  Piezometer
-  Hardwood Forested Wetland
-  Herbaceous Non-Forested Wetland
-  Active Mining

0 350 700 1,400 Feet

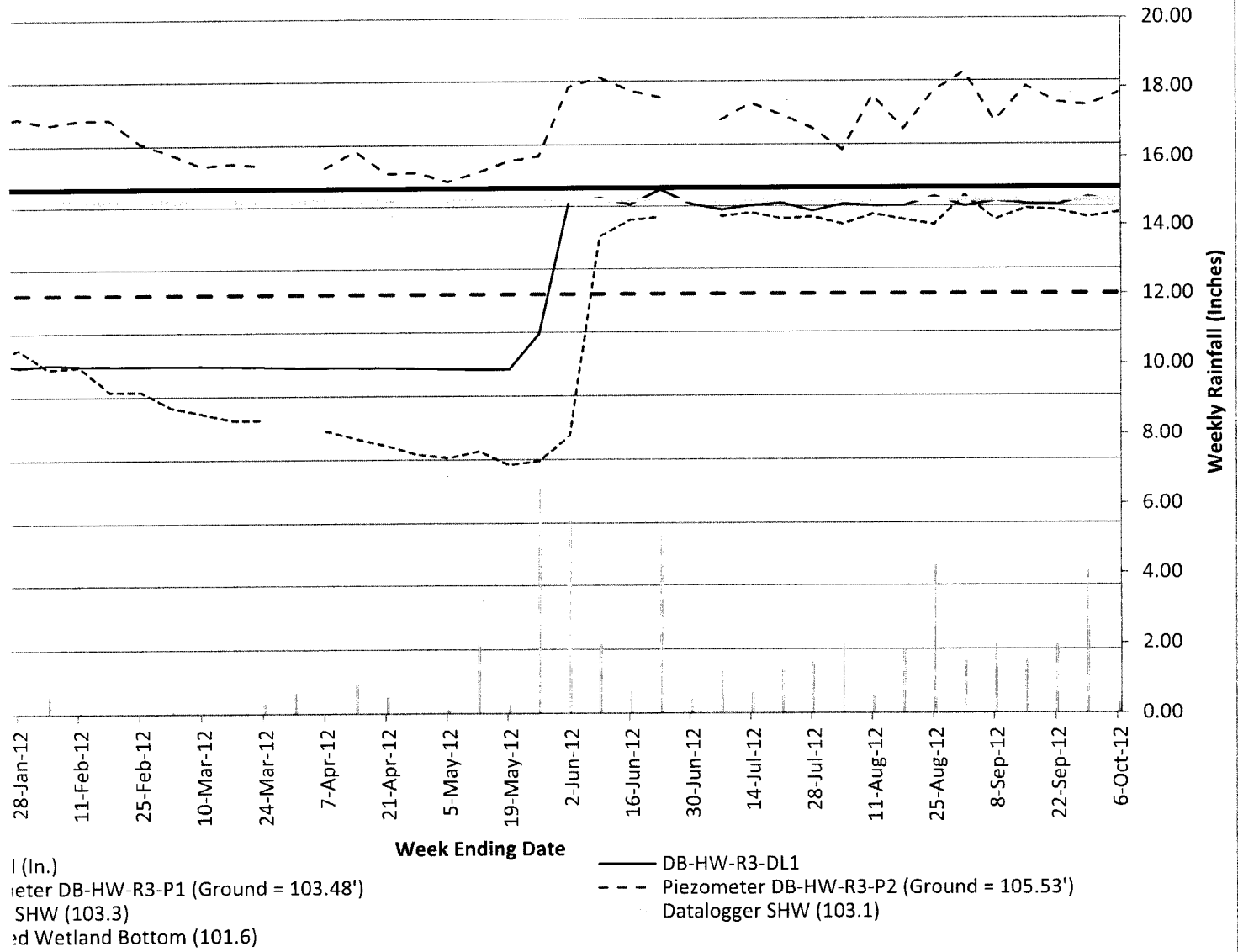


Reclamation Parcel DB-2 Wetland DB-TR-R1



An additional 1,877 acres of watershed will ultimately report to Wetland DB-TR-R1

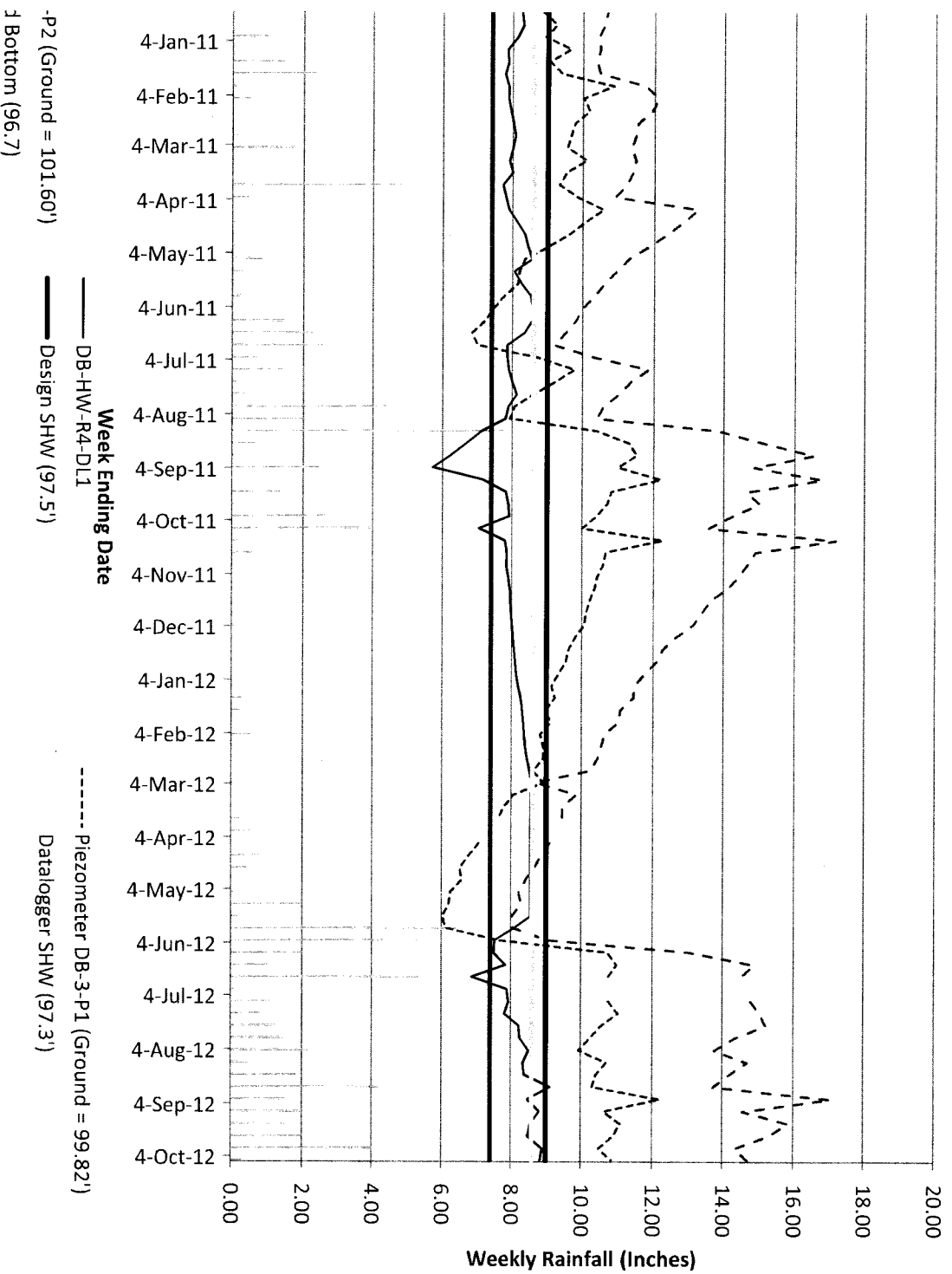
Reclamation Parcel DB-5 Wetland DB-HW-R3



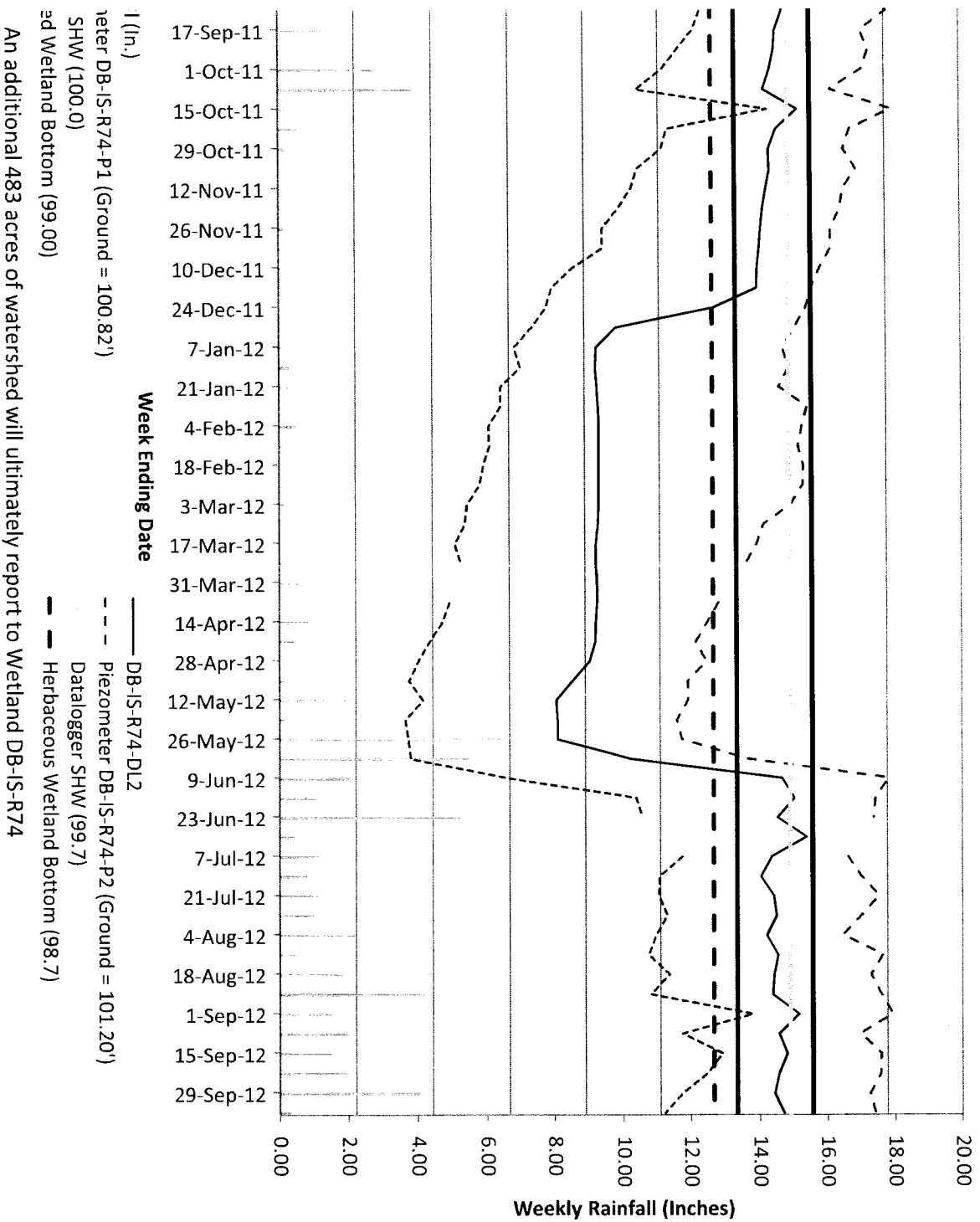
l (In.)
 ieter DB-HW-R3-P1 (Ground = 103.48')
 SHW (103.3)
 d Wetland Bottom (101.6)

An additional 153 acres of watershed will ultimately report to Wetland DB-HW-R3

Reclamation Parcel DB-3 Wetland DB-HW-R4



Reclamation Parcel DB-4 Wetland DB-IS-74-1



meter DB-IS-R74-P1 (Ground = 100.82')
SHW (100.0)
Wetland Bottom (99.00)

Week Ending Date

— DB-IS-R74-DL2

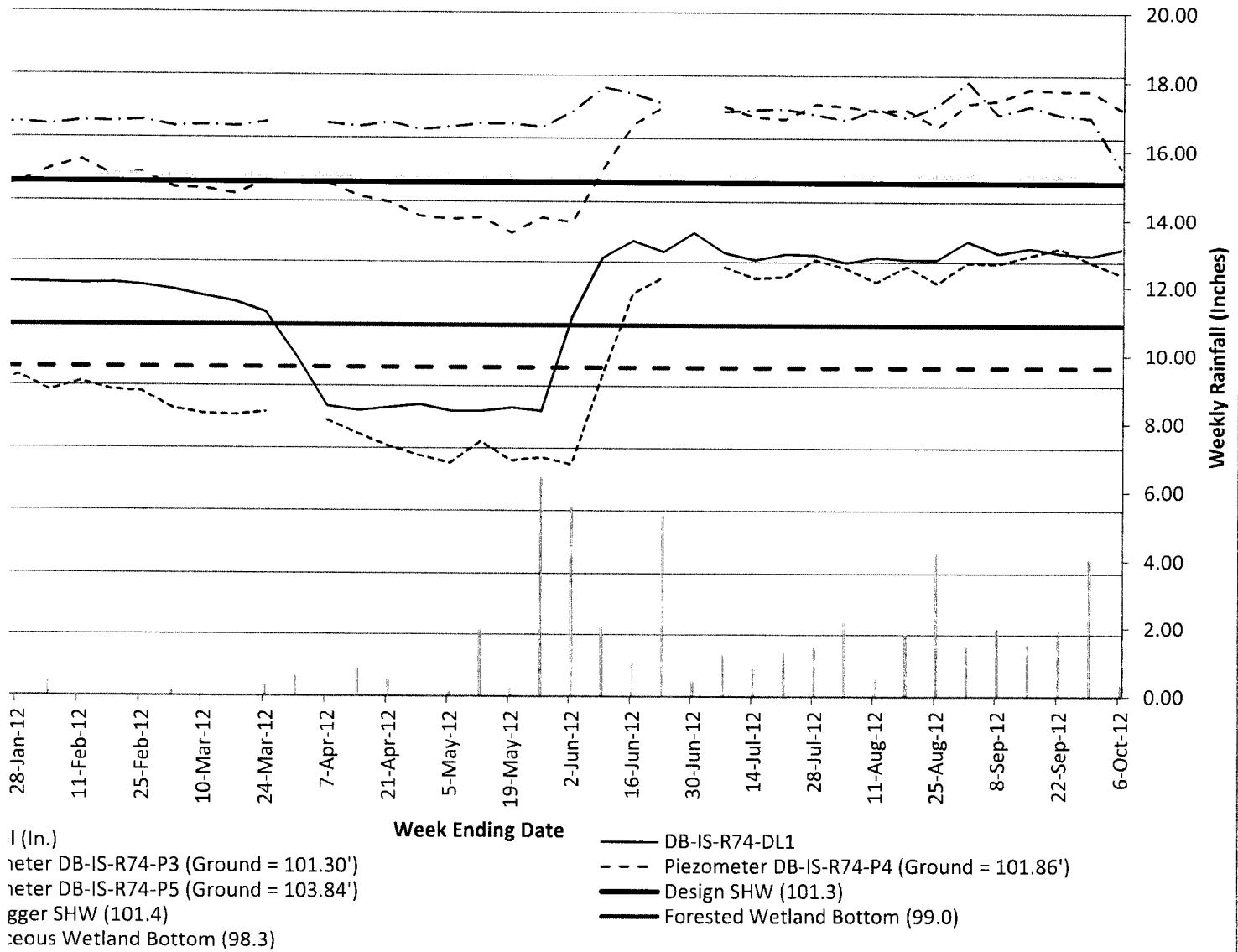
- - - Piezometer DB-IS-R74-P2 (Ground = 101.20')

... Datalogger SHW (99.7')

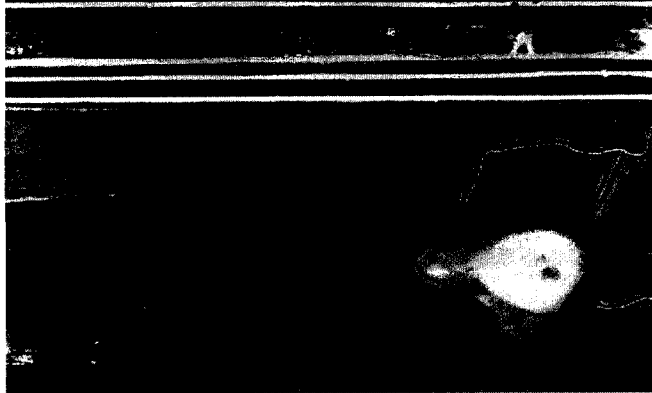
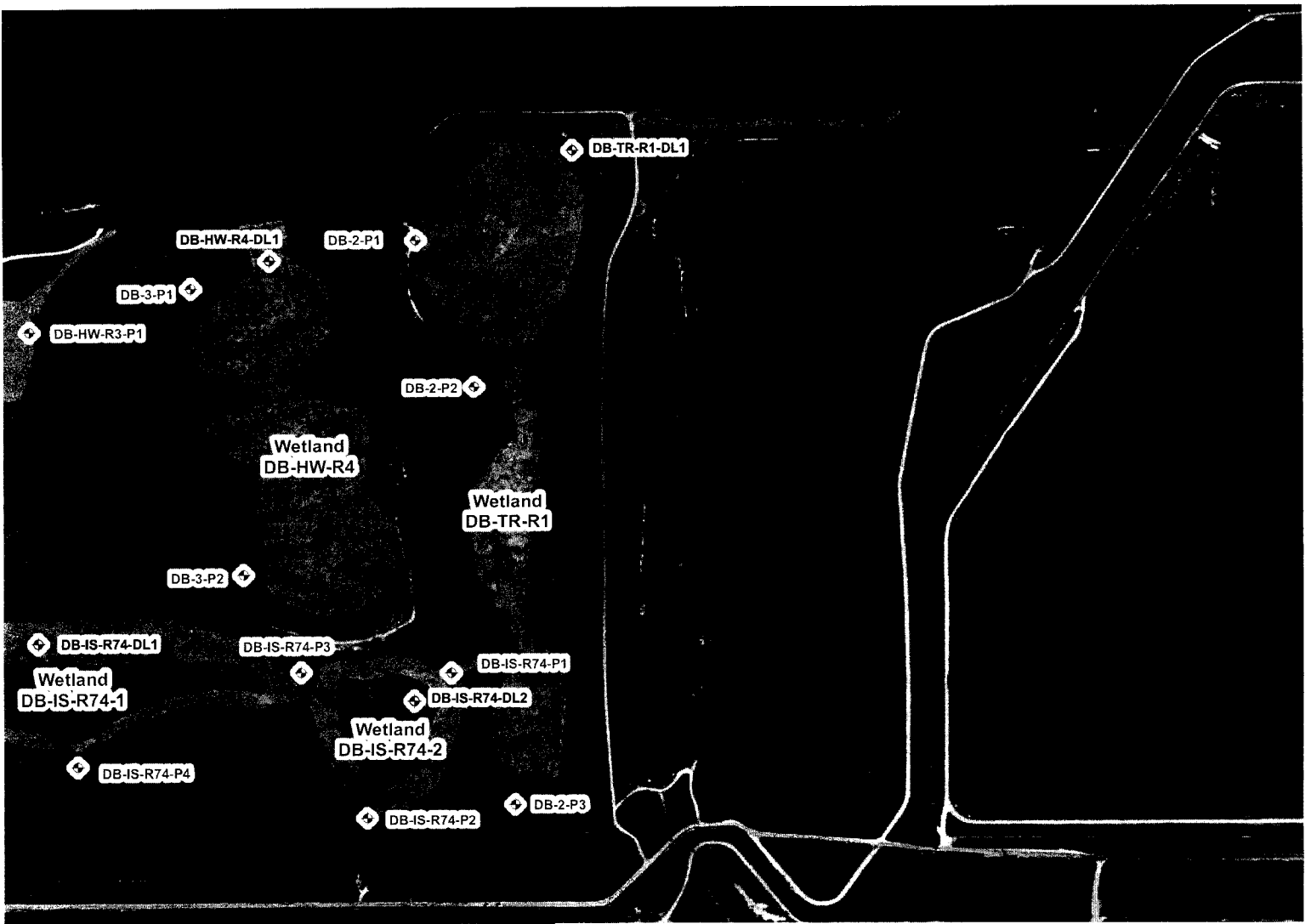
- . - Herbaceous Wetland Bottom (98.7')

An additional 483 acres of watershed will ultimately report to Wetland DB-IS-R74

Reclamation Parcel DB-4 Wetland DB-IS-74-2



An additional 483 acres of watershed will ultimately report to Wetland DB-IS-R74



CF Industries

**Reclamation Parcels DB-2, DB-3, DB-4 and DB-5
Wetlands DB-TR-1, DB-HW-3, DB-HW-R4 and DB-IS-R74**

Legend

◆ Data Logger

◆ Piezometer

Hardwood Forested Wetland

Herbaceous Non-Forested Wetland



0 350 700 1,400 Feet

Final decisions on quantities and types of solid waste to be generated will be reviewed with the state during the review of the Draft AEIS and decisions reported in the Final AEIS.

A specific waste management issue raised during scoping concerns phosphogypsum stacks. The USACE does not consider phosphogypsum and phosphogypsum stacks to be within the scope of this AEIS. Phosphogypsum is regulated by other agencies, including the FDEP as described below. The following is included in this AEIS to inform the public about this subject.

4.11.12.1 Phosphogypsum Overview

As mentioned previously in this AEIS, the U.S. and world agricultural industries utilize significant quantities of chemical fertilizers to replenish and supplement the nutrients that growing plants continuously remove from the soil. The demand for fertilizers and animal feed additives accounts for about 95% of the 8-10 million metric tons of phosphoric acid that is made each year in the U.S. from phosphate rock. The production of each ton of phosphoric acid (as P_2O_5) is accompanied by the production of about 5 tons of a by-product calcium sulfate dihydrate, also known as “phosphogypsum.” In the Central Florida Phosphate District (CFPD), the nation’s leading producer of phosphate rock, the industry generates about 32 million tons of phosphogypsum each year, with a current stockpile in large “stacks” (or “gypstacks”) of approximately 1 billion metric tons.

4.11.12.2 Processing CFPD Phosphate Rock into Phosphoric Acid

In the U.S., the primary deposits of phosphate rock are found and mined in Florida, Utah, North Carolina, and Idaho. After mining, the CFPD phosphate rock is transported to “washing” facilities, where it is separated from accompanying soil, stones, etc. and then processed. The desired phosphorus content of the phosphate rock is in a form (calcium phosphate) that will not dissolve in water and so cannot be “taken up” (and metabolized) by crops. The most common solution to the problem is converting the calcium phosphate to phosphoric acid. There are wet and dry processes for doing the conversion. Most U.S. production facilities, including those in the CFPD, utilize a “wet process” in which the prepared calcium phosphate rock is reacted with sulfuric acid to produce the phosphoric acid and gypsum as a byproduct. Phosphoric acid is concentrated by evaporation and further processed into water soluble phosphate compounds so it can be taken up by crops.

4.11.12.3 Phosphogypsum Management

The phosphogypsum, separated from the phosphoric acid, is in the form of a solid/water mixture (slurry) which is stored in open-air storage areas known as stacks or gypstacks. The stacks form as the slurry containing the by-product phosphogypsum is pumped onto a disposal site. Over time the solids in the slurry build up and a stack forms. The CFPD stacks have generally been built on unused or mined out land on the processing site.

As the stack grows, the phosphogypsum slurry begins to form a small pond (gypsum pond) on top of the stack. Workers dredge gypsum from the pond to build up the dike around it and the pond gradually becomes a reservoir for storing process water. The process water flows through ditches back to the facility. In the CFPD, the surface area covered by individual stacks ranges from about 300 to 700 acres. The current height of these stacks varies, and maybe as high as 220 feet. The total surface area covered by active phosphogypsum stack systems (ones that are still receiving phosphogypsum) in the CFPD is approximately 3,200 acres.

The tops of operating phosphogypsum stacks are covered by ponds and ditches containing process water. "Beaches" (saturated land masses) protrude into the ponds. These surface features may cover up to 75 percent of the top of the stack. Other surface features include areas of loose, dry materials; access roads; and thinly crusted stack sides. The crust thickens and hardens when the stacks become inactive and no longer receive process slurry.

The Florida Department of Environmental Protection (FDEP) maintains a Phosphogypsum Management Program that regulates (permitting, compliance, enforcement) the design, construction, operation and maintenance of phosphogypsum stack systems. It ensures the proper closure and long-term monitoring and maintenance of those systems which have concluded useful production, or which are otherwise required by rule to be closed. The program also administers financial responsibility requirements designed to guarantee that owners/operators have the financial ability to properly close and manage the stacks.

4.12 CUMULATIVE IMPACTS

CEQ regulations implementing NEPA require federal agencies to analyze the cumulative effects of their actions on the environment. CEQ regulations, under section 1508.78 note:

"Cumulative impact' is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

This section addresses the cumulative effects of the proposed actions in the context of other anthropogenic influences on the elements of the natural and human environment that may be affected by new phosphate mine projects in the future. The evaluations used available information about past, present and future actions. In accordance with CEQ regulations, for certain issues special studies were deemed essential, their overall costs were not exorbitant, and so those studies were done for the relevant issues. For other issues, if information was not available, the analyses used existing information and credible scientific evidence to evaluate cumulative effects (CEQ 1502.22).

Hi John,

EPA's comment about addressing the cumulative effects of ecosystem function could be addressed by providing a summary of the conclusions of the studies already referenced and providing a general description of the types of ecosystems and associated functions impacted historically and by the proposed actions. A break down types of ecosystem affected by acre per watershed and associated functional loss of the proposed and and historical actions (if the data is available) could also be included. The intent is not to require finding new data, but to summarize and present the information that should already exist in Ch. 5, Appendix D, other studies, or in analysis of existing GIS layers.

This can be achieved by completing the following tasks:

- Provide a description of the types of ecosystems (streams, different wetland types, different upland habitats. etc) that could be affected by mining activities (or reference a previous description). Also, provide a basic description of some of the functions of the ecosystems which could be impacted by mining. Example: Depending on the type of wetland, wetland ecosystems can serve numerous functions, including flood prevention, ground water recharge, recreation, providing breeding and feeding grounds for fish, shellfish, birds, and mammals, improving surface water quality, and many others.
(<http://water.usgs.gov/nwsum/WSP2425/functions.html>)
- Expand on the first paragraph of the section to include a summary of the previous studies (PRCIS, CHNEP, CCMO) referenced, including the stress factors that have caused cumulative ecosystem effects historically, the trends over time based on analysis of historical data (focusing on biodiversity and biological community health), affect on habitat connectivity, and the affect (or lack there of) on downstream ecosystem/river basins
- Provide the acres or stream miles by type of ecosystem affected by the proposed action.
- Also provide a summary of functional loss for each ecosystem, ideally by watershed/river basin (via WRAP scores or other method was used to assess functional loss re: 2008 mitigation rule in Ch. 5). If this is unavailable, state that it will be discussed in the ROD or permit.
- Break down the discussion of historic lands mined and reclaimed by ecosystem type and by water shed/river basin; include stream miles in the discussion.
- Re-insert the section deleted from a draft entitled "Aquatic Resources and Upland Habitat Loss", or cover the change in wetland and habitat coverage within the Peace, Myakka, Manatee, and Little Manatee River basins in other discussions
- Change the sentence on pg 4-105 ("The **most direct** measure of past and present effects of mining on land is characterization of the amount of land mined and then reclaimed in accordance with state regulations.") It could be, "**One** measure of past and present effects of mining on land is the characterization of the amount of land mined and then reclaimed in accordance with state regulations." Also, break down discussion of land mined and then reclaimed by watershed.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MEMORANDUM

SUBJECT: Meeting with Mosaic Fertilizer, LLC to Discuss EPA Comments on Phosphate Mining DAEIS

FROM: Dan Holliman – EPA Region 4 - NEPA Program Office

TO: File

Meeting Date: February 6, 2013

Meeting Location: EPA Region 4 – Atlanta, GA

Meeting Attendees:

Dee Allen – Mosaic
Allison Belle – Mosaic
Diana Jagiella – Mosaic
Mike Deneve – Mosaic
Peggy Strand – Venable, LLP
Dan Holliman – USEPA
Jamie Higgins – USEPA

Duncan Powell – USEPA
Tony Able – USEPA
Rick Capka – Dawson & Assoc.
Kirk Stark – Sawson & Assoc.
Tunis McElwain – USACE
John Fellows - USACE

The intent of this memorandum is to provide a brief summary of a meeting held with Mosaic Fertilizer, LLC representatives to discuss EPA Region 4 comments on the Phosphate Mining Draft Area-wide Environmental Impact Statement (DAEIS). During the meeting, Mosaic provided EPA with a copy of a letter titled "Mosaic Perspective on Select EPA Comments EPA – DAEIS Comment Letter Dated 07/30/2012." The letter provided by Mosaic was dated February 6, 2013 and is attached to this memorandum.

The following issues were discussed during meeting:

- 1) DAEIS Alternatives Analysis
- 2) Use of IWHRS and CLIP tools vs site specific data
- 3) Wetland Buffers
- 4) Mine Plan and Configuration
- 5) Permit Duration
- 6) UMAM vs WRAP



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Lithia, FL 33547
www.mosaicco.com

February 6, 2013

Mr. William L. Cox, Chief
Wetlands, Coastal & Oceans Branch
EPA Region 4, Water Protection Division
61 Forsyth Street
Atlanta, GA 30303

Mr. Heinz J. Mueller, Chief
NEPA Program Office
EPA Region 4, Office of Policy and Mgmt
61 Forsyth Street
Atlanta, GA 30303

Re: Mosaic Perspective on Select EPA Comments
EPA - DAEIS Comment Letter Dated 07/30/2012

Dear Messrs. Cox and Mueller:

Mosaic has reviewed the EPA's draft Area-Wide Environmental Impact Statement (AEIS) comment letter dated July 30, 2012 as submitted to the U.S. Army Corps of Engineers (Corps). While the Corps and their consultant CH2MHill will certainly provide their own responses in the Final AEIS, we thought Mosaic's perspective could be instructive on some issues. While some of these issues have been discussed in the time since July, 2012, we felt that a summary in writing was appropriate. Therefore, some of the EPA's select comments have been repeated below in **bold** font, followed by Mosaic's response.

1. DAEIS Alternative Analysis (from EPA Comment # 4 and 6)

EPA Recommendation: In the Overall Project Purpose discussion, the FAEIS should include additional justification on the "practicable distance," which the DAEIS defines as the distance between the ore extraction area and a new or existing beneficiation plant. EPA notes that by allowing only a slightly greater distance than the 10-mile distance used for mine site planning in the DAEIS (such as a 12-mile distance), additional flexibility would be possible in mine plan configuration, including the potential for fewer beneficiation facilities required.

Mosaic Response: Attached are maps showing both the 10 mile and 12-mile radius from Mosaic's closest beneficiation plants, which include Wingate, Four Corners and South Fort Meade.

DeSoto Mine: With respect to the DeSoto Mine, these maps confirm that no existing facility is close to either the 10 or 12 mile radius and thus there is not a practicable alternative that does not involve construction of a new beneficiation plant.

Ona Mine: With respect to Ona, these maps show that both the 10 mile and 12 mile radius circles from Four Corners overlap the western portion of the proposed Ona mine, but are still more than 5 miles short of taking in the entire Ona tract. Even if Ona used this existing Four Corners plant for some mining it would still need to construct a new plant. Further, the proposed Ona plant was planned for a central location so it could be

utilized for foreseeable future mining tracts, such as the Pioneer tract, which extends even further from Four Corners. Therefore, even though a portion of the Ona tract could potentially be mined to Four Corners it would not be feasible for all of Ona or the foreseeable future Pioneer tract to be mined to Four Corners.

The Wingate plant is slightly closer to Ona than Four Corners, but the Wingate plant is designed to produce less than 2 million tons per year of phosphate rock, whereas the production needs from the Ona facility is about 6 million tons per year. Further, since Mosaic's production needs depend on the simultaneous operation of both Wingate and Ona, Wingate would have to be upgraded to produce an additional 6 million tons per year to a total of 8 million tons/year. This addition would be the equivalent of constructing a new Ona plant, yet still would not be within close enough proximity to handle reserves from eastern Ona or most of Pioneer. Therefore a 12-mile radius limit from Four Corners or Wingate would not change the need to construct the Ona plant.

Wingate East Since the development of Wingate East does not involve new plant construction, this comment is not applicable to Wingate East.

2. **DAEIS Use of GIS for Ecological Analysis (from EPA Comment # 5)**

EPA Recommendation: EPA concurs with the use of the IWHRS and CLIP tools, but recognizes that they are composed of different data layers and use different datasets, and therefore could produce a substantially different outcome for a given site. EPA recommends that the FAEIS include additional information on the relative merits/ differences of both systems, such as how the Aggregated CLIP reflects a greater variety of ecological resources than the IWHRS, and how the Aggregated CLIP scores give more weight to the presence of surface waters, floodplains, and wetlands than does the IWHRS. EPA concurs with using both tools to provide "additional perspective for the EIS review in its evaluation of the alternatives."

Mosaic Response: Pg 3-115 of the DAEIS states that IWHRS and CLIP both have "value for evaluation of land parcel habitat value **short of having detailed, ground based site specific survey data.**" In fact both tools contain disclaimers advising against their use as "not intended, nor sufficient, to be the basis for local government comprehensive plans, environmental resource or agency permitting decisions." We recommend that the limitations of these tools be clear in the Final AEIS.

As an example of the inaccuracy of these tools, portions of the DeSoto, Ona, and Wingate East Mines were categorized as CLIP Biodiversity Priority 1 areas due to lands identified as potential habitat for the grasshopper sparrow and/or eight or more other state-listed wildlife species, based on 2003 habitat models created by FFWCC. However, at DeSoto, 52% of the area identified by CLIP as grasshopper sparrow habitat is actively tilled row-crop fields and site specific surveys for the presence of grasshopper sparrow at Ona—using USFWS protocols-- document they were not present. Additional portions of the DeSoto, Ona and Wingate East Mines were categorized as CLIP Biodiversity Priority 2

because they were identified as potential habitat for scrub jays and sand skinks and/or seven or more other listed wildlife species in the same 2003 habitat models.

In contrast, the Mosaic permit applications present the results of multiple wildlife surveys completed and repeated over many years, with some dating back to 1998. The surveys provide a more precise basis for analyzing the probable presence and population of wildlife species on mine sites and developing habitat management plans to maintain sustainable populations on a local and regional basis. This site-specific data is superior to IWHRS or CLIP.

While IWHRS and CLIP information may be marginally helpful in reviewing lands where detailed survey information has not been collected, it should not carry weight where site specific detailed surveys are available for each pending application. Therefore, while its use may be helpful for high-level AEIS or other evaluations, in Mosaic's opinion, it has minimal benefit for site specific avoidance and minimization analysis.

3. DAEIS Analysis of Wetlands and Buffers (from EPA Comment # 6)
EPA notes that, in accordance with NEPA, the DAEIS appropriately evaluated direct and secondary impacts on wetlands systems and considered employment of buffers, setbacks and greenways at perennial and intermittent streams.

Mosaic Response: Contrary to other forms of development such as residential or commercial areas, a blanket prohibition of phosphate mining within a set distance or buffer of a stream channel or floodplain would not likely produce environmental, hydrologic or economic benefits to private or public interests. Buffers are generally used for four (4) purposes: 1) Flood Protection, 2) Preclude Flowway Restrictions, 3) Water Quality Protection, and 4) Maintenance of Wildlife Corridors. While there may be a legitimate reason to preserve a given floodplain, portions of a floodplain, or otherwise retain a stream buffer on a case-by-case basis, a buffer does not automatically serve a scientifically beneficial purpose.

A. Flood Protection: With respect to flood protection, locating conventional development structures within floodplains can create the risk of property damage from future floods. Consequently, floodplain management regulations may require the first floor of structures to be elevated above flood elevations to reduce the potential for property loss. Phosphate mining, however, has no permanent structures. Rather, it temporarily diverts some of the runoff from the stream to the mining area or mine recirculation system contained inside the mine ditch and berm system. These areas capture a portion of the rainfall that would otherwise runoff, but because the mine areas have significant flood storage capacity, flooding potential is decreased, not increased. Ultimately, excess collected water is routed through NPDES outfalls, such that much of the flow is returned to the stream system after the flood peak has passed. No buffer beyond normal mine operations is needed for flood protection.

- B. **Flowway Restrictions:** With respect to flowway restrictions, mining is generally not proposed for such features unless they have been significantly impacted through ditching or other activities, such that the flowway could be restored to a more natural condition through reclamation. In such cases, a by-pass channel is designed and constructed for use in the mining stage to ensure flood volumes can be adequately passed without causing upstream flooding impacts. Thus case by case evaluation for flowway restrictions is superior to automatic buffers.
 - C. **Water Quality Protection:** Stream buffers are not needed for mining related water quality protection because the mine ditch and berm system serves that function. The ditch and berm precludes off-site turbid runoff and the outside slope of the ditch and berm system is grassed for that purpose as well. All discharges to streams are through NPDES outfalls, which are tested to ensure proper water quality standards are met.
 - D. **Wildlife Corridors:** Some stream floodplains or wetland areas provide wildlife habitat corridor functions, with each stream segment or location providing differing habitat values and widths. Due to the widespread variation, it is incorrect to conclude that corridor width is synonymous with wildlife value. While preservation of certain locations could result in significant wildlife habitat benefits, preservation of all floodplains, streams or wetlands would not result in a corresponding increase in wildlife habitat. These values and functions require a case-by-case review, rather than a one size fits all approach. It is also important to look at mine phasing, which often leaves habitat unimpacted for years and also restores habitat through reclamation; the point is that all wildlife habitat is not lost because of mining. Implementation of site-specific habitat management plans provides a biological basis for determining whether floodplain preservation would provide corresponding wildlife corridor benefits.
4. **Mine Plan and Configuration: (from EPA Comment # 6)**
For the proposed Mosaic Ona mine, the mine plan or configuration as proposed appears separated from the additional and contiguous Mosaic property to the south, also anticipated as a phosphate mine in the future and analyzed in the AEIS. EPA recommends that the Ona Mine site and the large Mosaic property to the south be planned concurrently, considering that a larger contiguous planning area would allow more options and opportunities for avoidance of wetlands and other environmental impacts and compensatory mitigation.

Mosaic Response: The Mosaic property directly south of the pending Ona mine is known by Mosaic as the Pioneer Tract. The AEIS treats this as a future mine, considered for purposes of cumulative impacts. This is an appropriate NEPA approach. While it might make sense to plan all potential, future mining operations holistically, there is also opposition to permitting properties too far in advance of mining, see comment below. In this case, Mosaic took into account logical ecological features and amended the southern Ona border—from the prior permitting effort—to either fully include or exclude such logical features. The remainder of the Pioneer Tract is identified as a potential future

mine. This allows appropriate ecological and mining features at Ona and beyond to be considered as a single unit whether that occurs now or as part of a future application.

5. Permit Duration (from EPA Comment # 6)

The DAEIS mentions a proposed permit duration of 45 years for the Ona mine, as well as similarly long times for the other mines. EPA notes that such a long duration can involve substantial risk for increases in environmental impacts over time as technical, biological, climatic, economic, and legal conditions will probably change over such a long period. In recognition of this high risk and uncertainty associated with a long permit duration, EPA recommends that a short permit duration be considered, with the entire proposed mine area potentially covered as sequential individual permits instead of a single long permit. EPA also recommends permit conditions that require periodic interagency review of mining and mitigation activities at least every 5 years, as well as annual or semi-annual substantive reporting of mining and mitigation activities, with a corrective action plan or adaptive management plan included in the same reports when warranted.

Mosaic Response: Based on the pending applications and timelines provided by Mosaic for the AEIS, the duration of mining for Wingate East is requested at 30 years, Ona is 27 years, and DeSoto is 16 years, with up to an additional 8 years for the completion of reclamation. Further extensions of time may be requested for each operating facility through the addition of extension parcels, such as the Pioneer tract, discussed above, each of which would require a separate permit. We believe that a shorter duration permit, or breaking the mines into multiple "sequential" permits, would seriously burden the industry and the permitting agencies with little enhancement of environmental benefits. Nonetheless, periodic interagency review can be accomplished in a manner similar to that of the S. Ft Meade Hardee Extension (SFM) permit. The SFM Corps permit requires an annual review to evaluate the authorized work, schedule, monitoring program, reporting process, and other aspects of the authorized work by the applicable agencies; similar requirements are contained in the SFM permit issued by FDEP.

That permit requires:

- a) The Permittee to submit to the ACOE a request to review the project 30 days before the end of the first full calendar year and each subsequent calendar year thereafter
- b) The Reviewing agencies are then to review the file and inspect the project site for compliance with the terms of the permit.
- c) If the Reviewing agencies determine the Permittee is not in compliance with the terms of the permit, until compliance is achieved, the Permittee must not proceed with the next scheduled mine block.
- d) The ACOE shall notify the Permittee of any deficiencies that may be noted and request a remediation plan.

Therefore, a mechanism is available to ensure the applicant meets the intent and commitment of the permit.

Both the Ona and DeSoto applications involve the need to construct a new beneficiation plant. Each plant and associated infrastructure represents a monetary commitment in the magnitude of \$ 1 billion. Expenditures of that magnitude—for a private company accountable to shareholders—require a degree of certainty in the amount of available mining reserves prior to such expenditures being made. For this reason, the pending mining applications are not conducive to short duration permits.

6. UMAM versus WRAP (EPA Comment # 6)

The FAEIS should include better justification for the adopting the Florida UMAM wetland functional assessment method instead of the older and largely obsolete WRAP method. The reduced mitigation value of preserved, but not necessarily restored or enhanced, wetlands also should be determined early in the review and discussion process. In addition, the temporal loss of wetland functions should be incorporated into the overall compensatory mitigation planning, likely resulting in a mitigation project with more than a one-to-one final ratio to compensate for the temporal loss and uncertainty associated with successful wetland and stream restoration following surface mining operations.

Mosaic Response: Incorporated in this comment are the subjects of: 1) WRAP and UMAM; 2) mitigation values for preservation; 3) temporal loss; and 4) use of mitigation banks. Each of these subjects is addressed in the following paragraphs:

WRAP and UMAM: The University of Florida Center for Wetlands (UF) conducted a comprehensive evaluation of mitigation banks under contract to FDEP and EPA.¹⁾ The evaluation included completing WRAP and UMAM assessments at 58 wetlands where restoration work had been completed. In its final report, UF noted:

- a. The difference between UMAM and WRAP scores ranged from -0.15 to +0.18, with a mean difference of 0.00 and a strong positive correlation ($r = 0.87$, $p < 0.01$), which UF noted was to be expected given the similar assessment method design and intent. "... given the similar scoring criteria and scale, a wetland assessment area may be expected to achieve equal UMAM and WRAP scores."; and
- b. Because the scoring categories and methods are similar, 52 of the 55 pair wise combinations between UMAM and its three scoring categories and WRAP and its six scoring categories were statistically correlated.

¹. University of Florida Center for Wetlands. 2007. *An Evaluation of the Effectiveness of Mitigation Banking in Florida: Ecological Success and Compliance with Permit Criteria*. Gainesville, Florida.

Mosaic also undertook an effort to determine the degree of agreement between UMAM and WRAP scores. In this case, we reviewed 681 wetland polygons associated with the South Fort Meade Hardee Extension application that had been assessed under both the UMAM and WRAP systems. The WRAP and UMAM scores of these polygons were plotted to form a regression curve, with WRAP on the x-axis and UMAM on the y-axis. In the event the scores were the same, the curve would have a 1:1 relationship, or a 45 degree angle. In this case, the slope was 1: 0.982, very close to 1: 1, indicating very little difference between the two systems. This is not surprising since both systems involve a functional assessment based on cover, landscape position, connectivity and wildlife utilization.

Therefore, it appears from these analyses that there is very little difference between the scoring results of UMAM and WRAP, such that either method should be acceptable for permit application review.

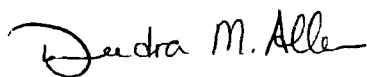
With respect to mitigation ratios, the three Mosaic pending applications mitigation ratios are shown below:

- DeSoto Mine Application
 - 1 : 0.9 Herbaceous Wetland Mitigation Ratio
 - 1 : 1.2 Forested Wetland Mitigation Ratio
 - 1 : 1.1 Overall Mitigation Ratio (without counting preservation)
- Ona Mine Application
 - 1 : 1.2 Herbaceous Wetland Mitigation Ratio
 - 1 : 2.2 Forested Wetland Mitigation Ratio
 - 1 : 1.5 Overall Mitigation Ratio (without counting preservation)
- Wingate East Application
 - 1 : 1.2 Herbaceous Wetland Mitigation Ratio
 - 1 : 1.3 Forested Wetland Mitigation Ratio
 - 1 : 1.3 Overall Mitigation Ratio (without counting preservation)

As a result, these project sites, based on applications as submitted, would contain approximately 2,300 more wetland acres after mining than they contained before.

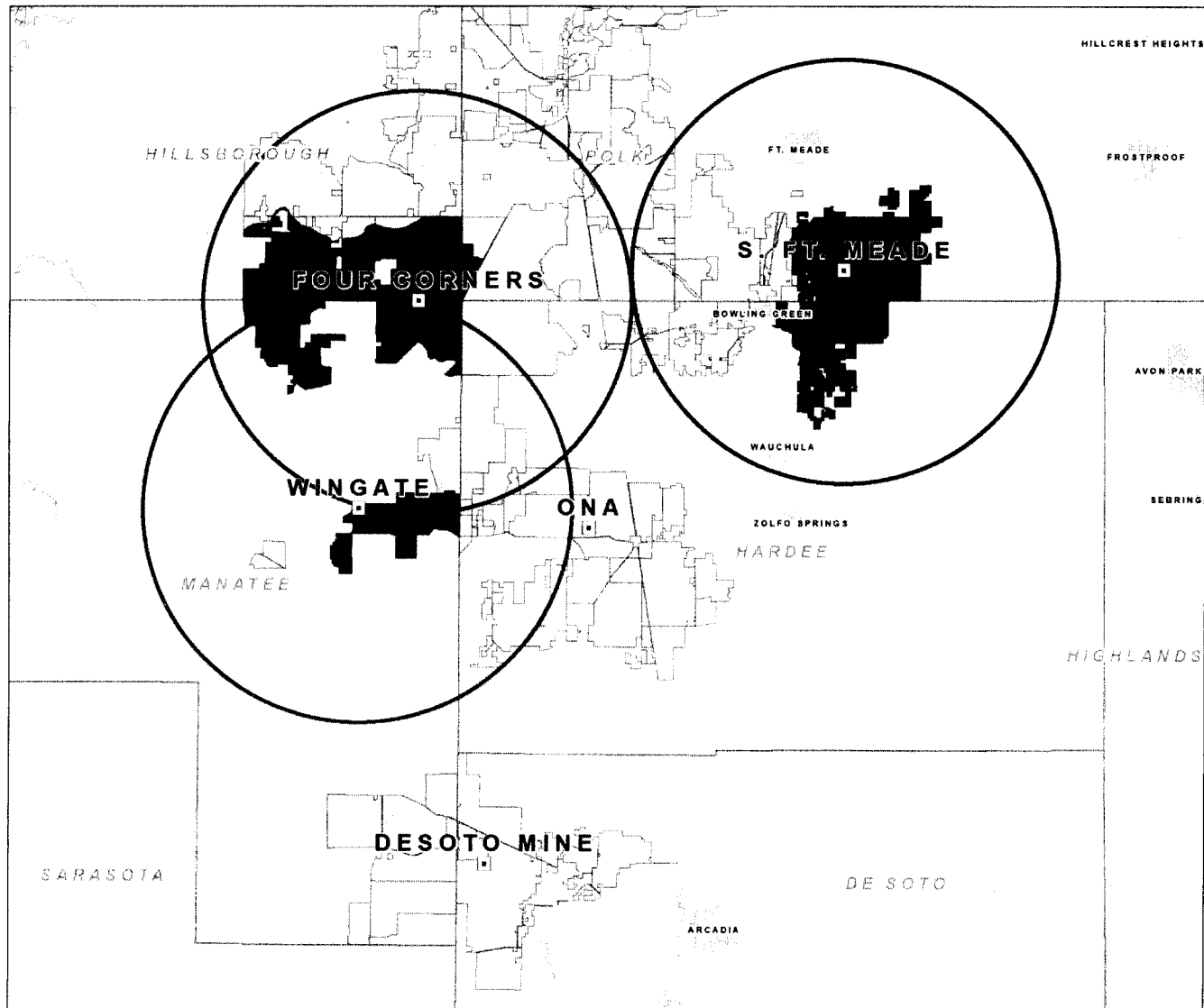
We hope you find these comments helpful as you continue your review of the AEIS and individual permit applications. If you have any questions or would like to discuss some of these issues further, please contact me at 813-500-6914 or deedra.allen@mosaicco.com.

Sincerely,

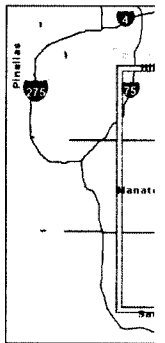


Deedra M. Allen, P.E., J.D.
Mine Permitting Manager

Existing Plants 10 Mile Radius



Loca



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- Facility
- Four C
- S. Ft.
- Winga
- Other

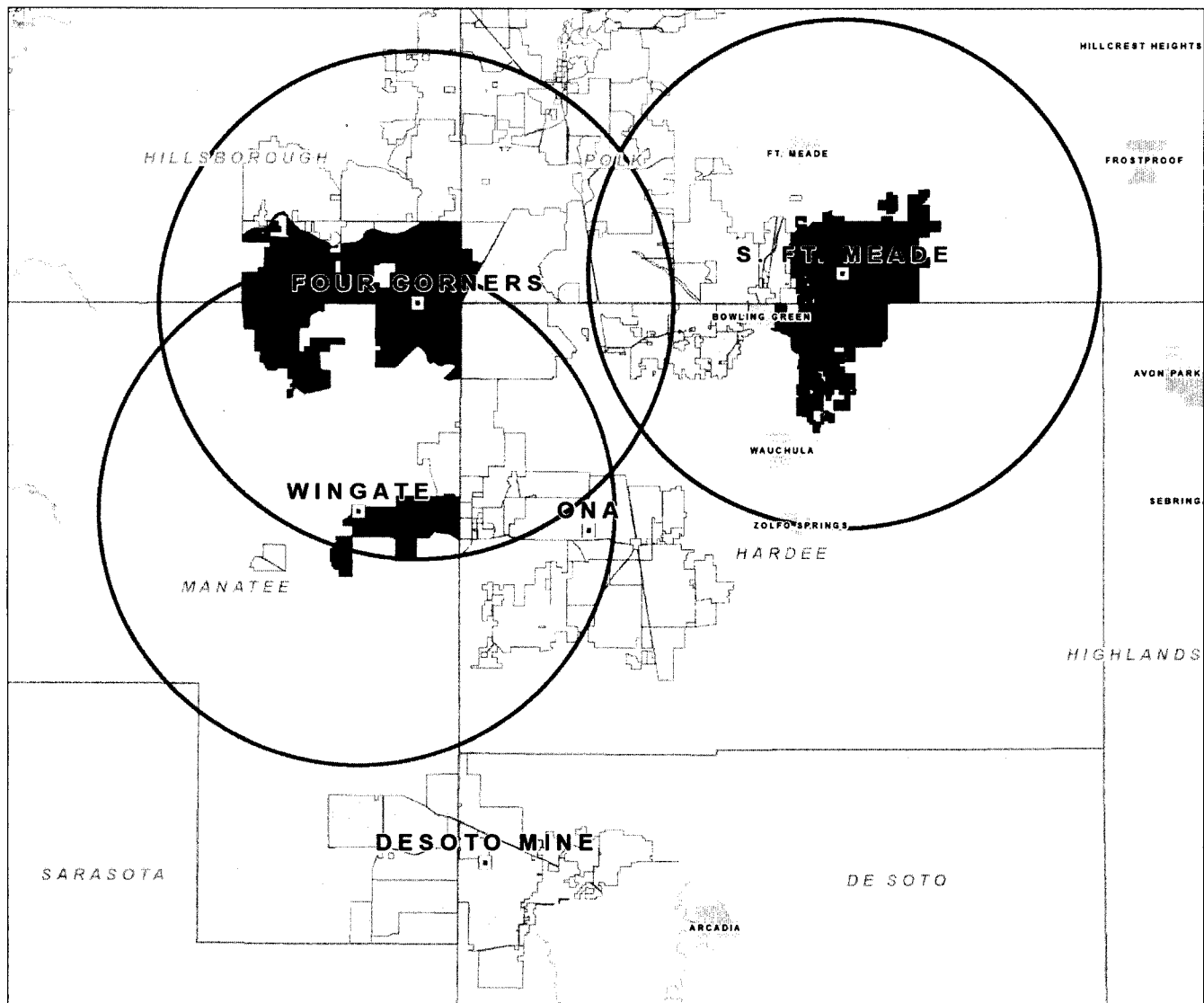


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Existing Plants 12 Mile Radius



Loca

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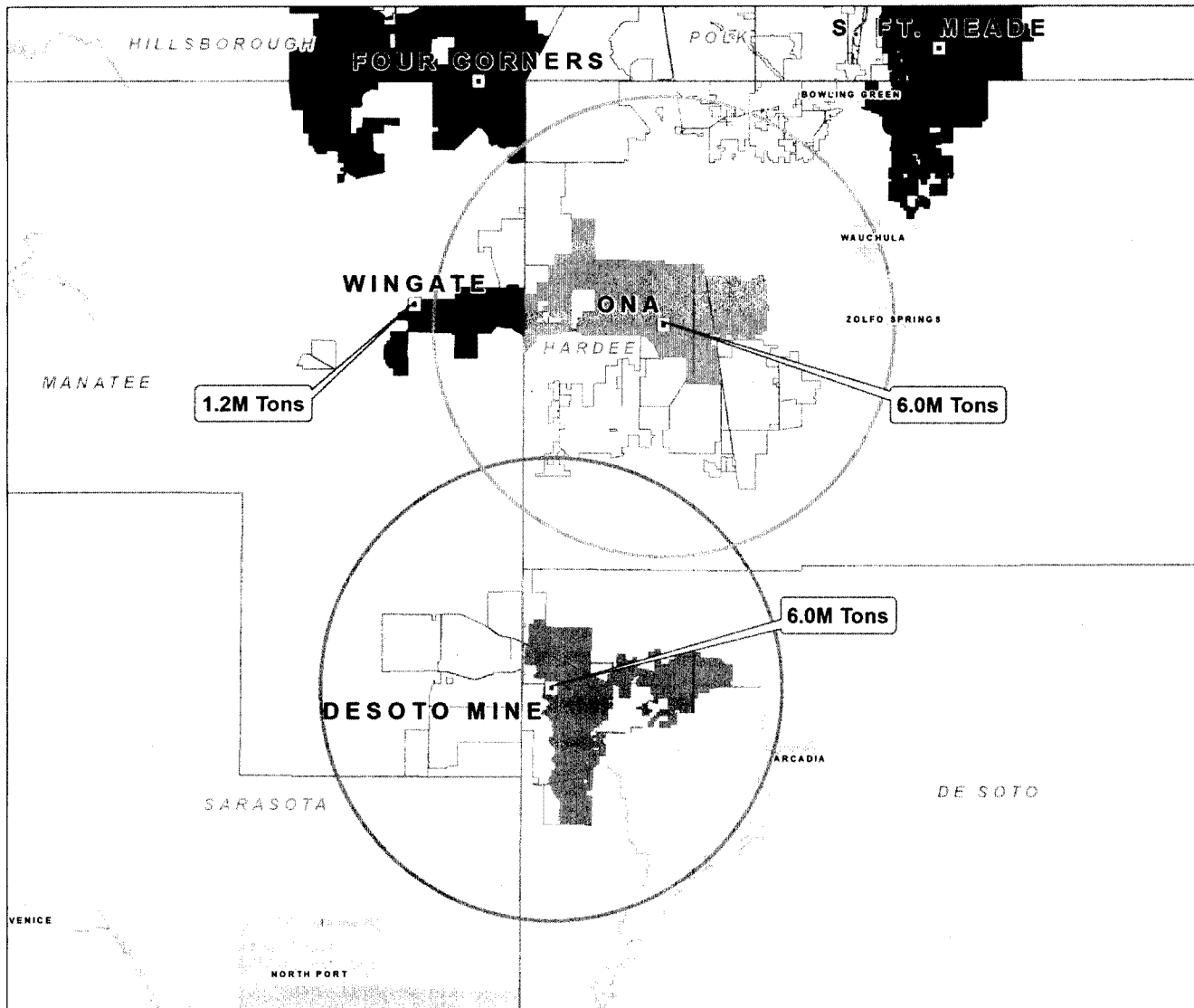
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- Other

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Proposed Plants 10 Mile Radius



Loca

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- Ona
- DeSo
- Four C
- S. Ft.
- Winga
- Other

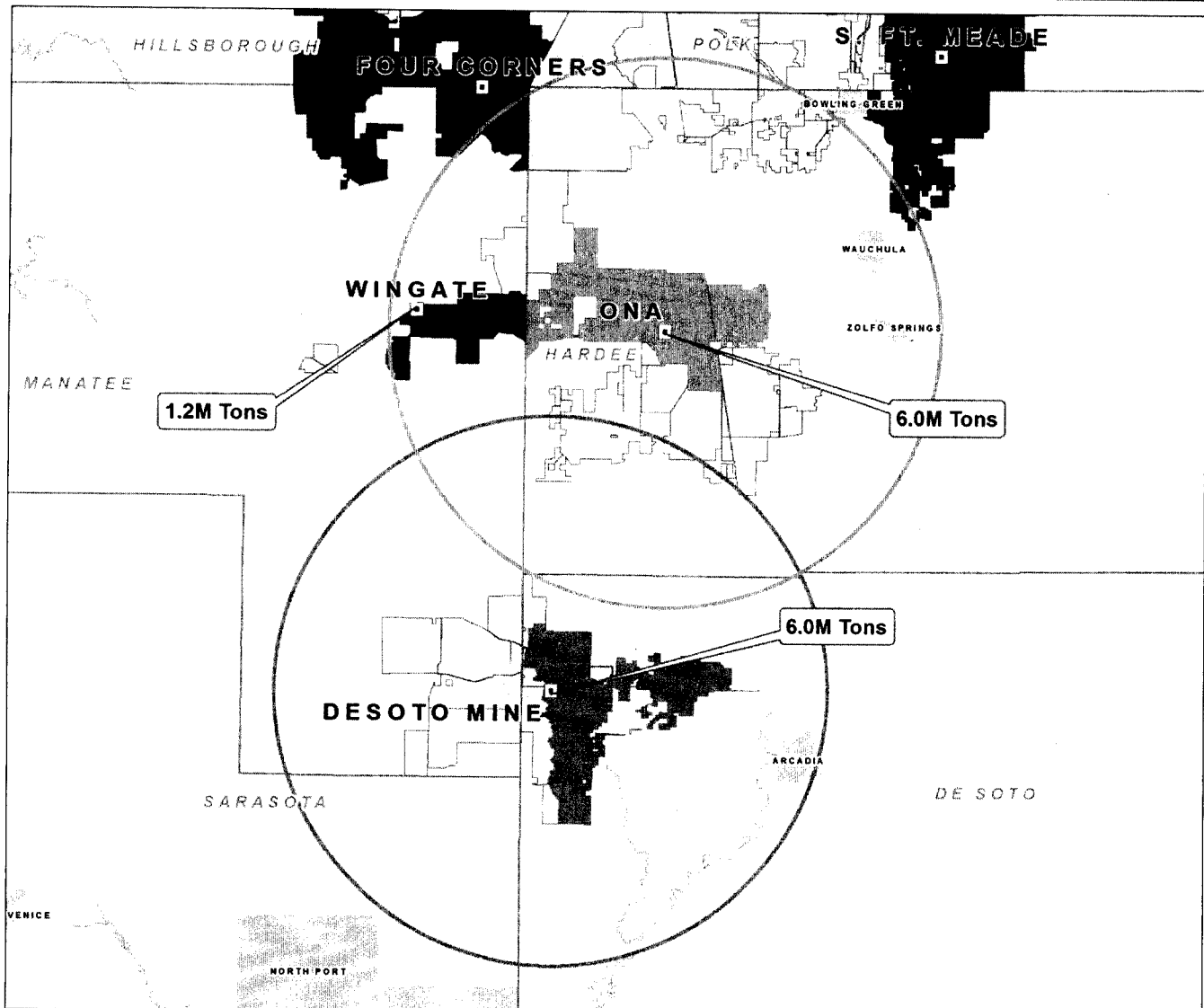
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Proposed Plants 12 Mile Radius



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March 29, 2013

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Re: New Information and Supplemental Comments for proposed Levy Nuclear Plant (LNP), Tarmac (aka "King Road") Mine and Areawide Mining Environmental Impact Statements (EIS)

Dear Mr. Hambrick, Mr. Sarfert and Col. Alan Dodd:

On February 10, 2013, the Ecology Party of Florida submitted a letter to the COE adopting and incorporating all of the comments Dr. Sydney Bacchus provided to the COE for the Environmental Impact Statements for the projects referenced above. Our letter also provided additional new information and supplemental information acquired since the release of the FEIS for the proposed LNP and the DEIS for the proposed Tarmac mine. The new information included the official transcript for the October 31, 2012 and November 1, 2012 NRC licensing hearing for the proposed LNP. The November 1, 2012, transcript of that hearing included sworn testimony by Mr. Peter G. Hubbell, the former Executive Director of the Southwest Florida Water Management District (SWFWMD).

This letter provides additional new information, evidence, and supplemental comments that refute parts of Mr. Hubbell's sworn testimony, specifically, his assertion that SWFWMD can be relied upon to protect the wetlands and enforce relevant laws, conditions and other protective measures. Additionally, we adopt and incorporate all of the comments provided

by Norma Killebrew on the EIS documents referenced above. The new information, evidence and supplemental comments include a sworn affidavit by Norma Killebrew dated March 28, 2013, with the two Exhibits and Attachments A through F, to her affidavit.

In addition to refuting Mr. Hubble's testimony that SWFWMD can be relied upon to enforce protective conditions, or even their own rules and laws of the State of Florida, Mrs. Killebrew's sworn affidavit, exhibits and attachments also provide clear evidence of the significant direct, indirect and cumulative harm *already* suffered by the regional Floridan aquifer system in the vicinity of her family ranch and dwellings: the very same aquifer system that would be harmed by the proposed LNP and Tarmac Mine and any additional mining within the SWFWMD and surrounding water management districts' boundaries. Her documents detail SWFWMD's failure to enforce regulations requiring mitigation and prevention of ongoing harm to the aquifer, legal users and local waters, as well as the resulting harm.

Attached is an electronic copy of Mrs. Killebrew's sworn affidavit, with Attachments A through E of Exhibit 1, and Exhibit 2. Mrs. Killebrew will mail a CD with a copy of this letter and both exhibits and all attachments. Please ensure that these documents are considered and included in each of the EIS files of record for the proposed LNP, Tarmac mine, and Areawide mining.

Thank you for your attention to this matter.

Sincerely,



Cara L. Campbell, Chair
Ecology Party of Florida
chair@ecologyparty.org

Attachment

cc:

Diane Curran, Esq., Harmon, Curran, Spielberg + Eisenberg (dcurran@harmoncurran.com)

Norma Killebrew (Tiff313@aol.com)

Dr. Sydney Bacchus (appliedenvirserve@gmail.com)

Jaclyn Lopez, Center for Biological Diversity (jlopez@biologicaldiversity.org)

Michael Mariotte, Nuclear Information and Resource Service (NIRSnet@nirs.org)

Lt. General Thomas Bostick, Chief (usarmy.pentagon.hqdaoce.mbxdaen-zc@mail.mil)

Cindy Dohner, US Fish & Wildlife Service Region 4 Director (Cynthia_Dohner@fws.gov)

Gwendolyn Keys Fleming, USEPA Region 4 Administrator (Beverly.Brenda@epa.gov)

Heinz Mueller, USEPA Region 4 Chief, NEPA Program Office (Mueller.Heinz@epa.gov)

Miles M. Croom, NOAA Asst. Regional Admin. Habitat Conservation Div.

(Miles.Croom@noaa.gov)

Mark Sramek, NOAA Habitat Conservation Division (Mark.Sramek@noaa.gov)

**DECLARATION OF NORMA KILLEBREW
REFUTING SWORN TESTIMONY OF
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
FORMER EXECUTIVE DIRECTOR PETER G. HUBBELL
DURING THE
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD HEARING ON NOVEMBER 1, 2012
FOR THE PROPOSED PROGRESS ENERGY FLORIDA, INC.
LEVY COUNTY NUCLEAR POWER PLANT UNITS 1 AND 2 COMBINED LICENSE**

I, Norma Killebrew, declare as follows:

1. My name is Norma Killebrew. I am more than eighteen years of age and am competent to make this Declaration based on personal knowledge and experience.

2. I am a third-generation Floridian and have resided in Florida for 69 years. My family owns a home in the vicinity of the proposed Progress Energy Florida, Inc. ("PEF") Levy Nuclear Power ("LNP") plant Units 1 and 2 and the proposed Tarmac King Road limestone ("Tarmac") mine, both in Levy County, Florida. My current address is the Killebrew family ranch in Hillsborough County, Florida. We owned that ranch prior to the initiation of four adjacent and nearby phosphate mines currently operated by Mosaic Fertilizer, LLC ("Mosaic").

3. On October 31, 2012, and November 1, 2012, the Atomic Safety and Licensing Board ("ASLB") of the Nuclear Regulatory Commission ("NRC") held a hearing in Bronson, Florida for the Intervenor who challenged the proposed combined license of PEF's proposed LNP. I am a member of the Ecology Party of Florida and am opposed to the proposed LNP and the proposed Tarmac mine that would supply the mined aggregate (i.e., limrock and sand) for the construction of the LNP facility. I was unable to attend that hearing because of family illnesses.

4. I reviewed the written transcripts produced by the court reporter for those hearings. According to those transcripts, Peter G. Hubbell provided sworn testimony, as the former Executive Director of the Southwest Florida Water Management District ("SWFWMD"), on November 1, 2012, the second day of that hearing. On pages 1524-1527 of the LNP Hearing Transcript, Docket No. 52-029-COL, ASLBP No. 09-879-04-COL-BDO1, of his sworn testimony, Mr. Hubbell made numerous statements that were false or misleading.

5. I have extensive personal experience with the SWFWMD that extends at least from 1997 to the present for water-use projects similar to those in Mr. Hubbell's sworn claims. I also have extensive personal experience with the SWFWMD's rules that have not been enforced. Based on my extensive personal experience, his claims are not correct.

6. Support for the inaccuracy of Mr. Hubbell's claims and the long-term failure of the SWFWMD to enforce its rules and state laws that apply to the SWFWMD is provided in my cover letter dated March 25, 2013 and attachments to the SWFWMD, Florida Department of Environmental Protection ("FDEP") and relevant federal agencies, including the US Army Corps of Engineers ("COE") and the US Environmental Protection Agency ("USEPA"). That letter and Attachments A through F are incorporated into my sworn affidavit as **Exhibit 1**.

7. That letter and exhibits described three sinkholes that had opened in the past few weeks in Seffner, northwest of the mining. Today there was a report of a fourth sinkhole in that same area. A copy of that report is included with my Affidavit as Exhibit 2 and also is available on line at:
<http://www.myfoxtampabay.com/story/21814674/2013/03/28/for-seffner-sinkhole-family-theres-no-escape>

8. Attachment A for my letter includes specific examples, ranging from 1997 to 2013, of SWFWMD's failure to do the very things that Mr. Hubbell's sworn testimony states the SWFWMD does. Attachment F includes copies of the following documents as examples of the proof that the permittee, Mosaic Fertilizer LLC ("Mosaic"), has violated permit conditions, SWFWMD rules, state laws and federal laws that have resulted in harm and economic impacts to my family's property, health, safety and welfare. The following documents included in Attachment F:

1. 4/17/97 Maddox Groves Mosaic property damage from water-level drop of 20 feet complaint letter
2. 1/27/04 FDEP/Cantrell IMC Barber Branch contamination Consent Order letter
3. 4/2/08 Mosaic Alafia River flow augmentation wells letter
4. 8/21/09 FDEP/Rivera Mosaic Four Corners Lonesome mine violation warning letter
5. 4/30/10 SWFWMD/Murphy Mosaic MU7 Lonesome dewatered aquifer letter

6. 7/14/10 COE USEPA/Giattina re: Killebrew 6/30/10 comment lettter
7. 3/1/11 SWFWMD/Balser Mosaic noncompliance MU19 dewatering preserved wetlands letter
8. 1/31/12 SWFWMD/Balser Mosaic MU19 complaint Snyder/Acecapaders water level wetland impacts letter
9. 2/7/12 SWFWMD/Hurst Mosaic MU19E failed preservation water recovery letter
10. 2/14/12 Mosaic MU19 mine pit figure as Acecapaders Mitigation
11. 2/28/12 Mims Petition for Hearing over SWFWMD Mosaic WUP
12. 3/27/12 Mosaic request for more water MU19 letter
13. 3/27/12 SWFWMD/Starford approval of Mosaic wup20011400.025
14. 4/4/12 SWFWMD/Balser Mosaic MU19 lowered water levels letter
15. 4/5/12 SWFWMD/Balser Mosaic Lonesome lower water levels in preservation wetlands letter
16. 4/5/12 SWFWMD/Balser Mosaic Lonesome MU19 lowered water levels
17. 4/9/12 SWFWMD/Balser Mosaic MU19 lowered water levels Hurrah Preservation area letter
18. 4/9/12 SWFWMD/Balser Mosaic MU19 new wells augmentation lowered water levels Preservation area letter
19. 12/17/12 SWFWMD/Hughes Mosaic noncompliance MU19 mitigation dry well letter
20. 1/17/13 SWFWMD/Hughes Mosaic Four Corners MU19 water levels not maintained letter
21. 1/17/13 SWFWMD/Hughes Mosaic Manson Jenkins water levels not maintained letter
22. 1/18/13 SWFWMD/Hughes Mosaic Four Corners MU19E water levels not maintained letter
23. 1/18/13 SWFWMD/Hughes Mosaic MU21 inadequate Mitigation Plan letter
24. 2/8/13 SWFWMD/White Mosaic WUP compliance time extension denial letter
25. 3/11/13 SWFWMD/Hughes Mosaic inadequate EMP Report 1.5 yr wetland drawdowns letter
26. 3/19/13 Mosaic invests in Saudi fertilizer venture

9. Examples of the false and misleading nature of Mr. Hubble's sworn testimony are provided in the following paragraphs.

10. Judge Karlin asked Mr. Hubble if the public has opportunity to submit comments regarding the Environmental Monitoring Plan and the Aquifer Performance Testing Plan and Judge Karlin seemed interested in determining the scope of public input into mitigation plans and or supplemental water plans. Judge Karlin wanted to know how the public is informed and how information for mitigation plans and water plans is provided to and by the public. Mr. Hubble testified that he "guesses" drafts and mitigation plans and /or water plans are located on the SWFWMD online site. His testimony suggested that the public is able to get these documents from the WMIS site. Mr. Hubble stated that he thought the public would have access to documents and reports.

11. When I searched the WUP SWFWMD online site for the LNP water permit #13262, I found only about 5 or 6 filings under documents and the latest information that the public is privy to on that site is dated 2010. There are no annual reports or drafts of any LNP documents on SWFWMD's online site.

12. The WMIS site is not easy for the public to navigate. Documents may or may not be filed there. One reason is that the person who produces a document, including a permittee, is allowed to request that a document **not** be included on the WMIS site if they don't want the public to know that information.

13. In my experience with SWFWMD's permitted mining and water use in Hillsborough County, no one from the SWFWMD notified me or the public, by legal notice, letter or any other means that I have seen, that documents regarding applications, existing permits, filings or hearings that result in harm to the public are filed online. I have never seen anything indicating that the SWFWMD is requesting public input via the online WMIS site. In fact, I have submitted complaints and requests repeatedly to the SWFWMD, by phone, email, letters and in person, about the harm that its mining and water use permits have caused to me, my family, our property and our ranch business, but the SWFWMD has ignored my input since 1997.

14. I have registered complaints with the SWFWMD about the lowered ground water in our area in Hillsborough County for years and have never had any input into discussions, comments, meetings, phone calls or emails regarding mitigation, wells, ground water levels, affects of mining on local ground water levels (piezometer readings), local bodies of water or even our property. For example early in January 2012, a trailer park community just to the east of our property known as the Florida Acecapaders, filed a complaint with SWFWMD and Mosaic about the fact that there was no water in their pond and their wells were dry. In a letter dated April 2012, from SWFWMD's Michael Balser to Mosaic's David Jellerson, Mr. Balser stated that the Acecapader property water problems were "solved." Mosaic had proposed "mitigating" the complaint with a "large, open water feature" which in reality was one

of Mosaic's mine pits, as the solution for the problem of the lowered water table that Mosaic's mining and water use had caused. The SWFWMD staff accepted that "solution" without even notifying me, ignoring that fact that Mosaic's solution violated Mosaic's permit requirements to refill that pit to pre-mining grade and ignoring the fact that leaving that open mine pit would result in continual loss of surface and ground water because of evaporation of water from that open mine pit. Mosaic's illustration of that open mine pit as the "solution" to the problem is included in my letter as Attachment F10. It is obvious from the water numbers in that figure that Mosaic did not address the additional loss of water to evaporation. Balser stated further in his letter that the "complaint is now closed," but Mosaic's own reports to the SWFWMD confirm that water levels measured in piezometers show that the water levels still have not recovered. Mosaic's own reports have documented a water problem since 2010, yet Mosaic continues receiving extensions from the SWFWMD for "mitigation" of this harm to the regional aquifer system and to the public. No public input has been solicited for proposals, information, or approvals. No adjacent legal water users were notified. There are other areas within the Four Corners Mine area that suffer from lowered water tables and no notifications, hearings, drafts, legal notices or posters address that water problem and neighboring legal water uses have NO input and are not even notified of these problems. Attachment F of Exhibit 1 includes examples of documents supporting my statements.

15. I have been allowed a total of three minutes to present testimony to the Hillsborough County Board of County Commissioners regarding how my family and property have been forced to endure mining dust so thick it is blinding, lowered groundwater levels, dried up springs, streams and wetlands, including the Little Manatee River, but never have any of the SWFWMD or other agency officials or staff asked for me or my family for any type of participation regarding these problems. Nor has SWFWMD followed the required steps in mediating public complaints regarding damage to pre-existing legal water users, as stated in permit conditions for WUP Permit 2001400.25. Clearly the SWFWMD does not follow its own rules and governing laws.

16. In Mr. Hubble's sworn testimony he said that the public may see records at SWFWMD without having to file a Freedom of Information Request referred to as a "FOIA" by Judge Karlin. I was told by Joe Oros of the SWFWMD that I had to request permission to search documents at the Bartow office and I did file that FOIA request and was given a number to use when calling the "vault" and arranging for a visit. I was asked what I was looking for and the young lady set up an appointment and had the materials there on a desk. So, Mr. Hubble's testimony that a FOIA is not required is incorrect.

17. For the public to know about mitigation, supplemental water plans, groundwater problems, Aquifer Performance Testing Plans, Environmental Monitoring Plans, the public must rely on legal notices and there are no legal notices for the countless changes to the permits and other deals cut by the SWFWMD staff when the permittees fail to meet permit conditions like maintaining water levels on and surrounding permitted projects. To access any of these documents online requires that those documents be filed online and in a manner one can access those documents, but that still does not provide any means for input from the public.

18. In conclusion, the SWFWMD, FDEP and federal agencies that permitted those projects have done nothing to force its permittees to restore the water levels, springs, streams or wetlands on and surrounding our ranch property nor reverse the adverse impacts that the permittee has caused and the agencies also have not forced the permittee to correct any of the other environmental damage or health problems caused by the permitted actions. The reason is because there is no way to reverse or mitigate the damage those permits have done to the aquifer and our water resources. If that damage could be mitigated or reversed the SWFWMD and other agencies have had years to have done that, but they haven't. So how could the agencies possibly mitigate the same type of damage to the same aquifer system for the proposed LNP. Mosaic's \$1 billion deal with the Saudi Arabian firms (Attachment F26) to continue mining in Florida, despite the irreversible damage from existing mining, suggests the damage will become more severe so those companies can profit by selling our resources to other countries.

FURTHER AFFIANT SAYETH NAUGHT.

Under penalty of perjury, I certify that the above statements are true and correct.

Executed on this 28th day of March 2013 in Hillsborough County, Florida

Norma Killebrew

Norma Killebrew
PO Box 129
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EXHIBIT 1

March 25, 2013

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Re: Supplemental Comments on Areawide Environmental Impact Statement (EIS) for Mining and Failure of Mosaic Fertilizer LLC (Mosaic) Mining to Comply with State and Federal Laws and Permit Conditions

Dear Agency Representatives:

Attachment A is a list of examples of the environmental and human-health hazards and financial losses that have been inflicted on our family and property since 1997 as a result of the permits and authorizations your agencies have given to Mosaic Fertilizer LLC and others, now being used by Mosaic. These problems include reduction in water levels, water contamination, air pollution and noise pollution that violate Mosaic's permit conditions, SWFWMD and FDEP rules, and state and federal laws. As described in **Attachment A**, none of your agencies has taken any enforcement action against Mosaic, requiring them to resolve the countless complaints that we have submitted to your agencies since 1997. Additionally, your staff continues issuing permits and other approvals to Mosaic for more mining, groundwater withdrawals and variances from existing permit requirements, while failing to consider the cumulative adverse impacts that already have occurred to our property, local and regional aquifers and surface waters.

New Sinkholes

During the week of March 4, 2013, two new sinkholes opened in Seffner, Florida, which is in Hillsborough County and a third one opened this past weekend. This is the same county where our ranch and home are located. These new sinkholes destroyed homes and property and killed a resident. Similar sinkholes have occurred in southeast Hillsborough County within a couple of miles of Mosaic's phosphate mines and slurry pits and our ranch and home. Those sinkholes are discussed in **Attachment B** from the following links, but your staff and Areawide EIS haven't considered the mining as a cause of all of these sinkholes:

<http://www.usatoday.com/story/news/nation/2013/03/04/sinkhole-home-florida/1961997/>
<http://www.usatoday.com/story/news/nation/2013/03/04/sinkhole-seffner-florida/1963175/>
<http://brandon.patch.com/articles/3rd-seffner-sinkhole-increases-community-concerns>

Sinkholes Linked to Groundwater Impacts from Mining in Hillsborough and Other Counties

Because these deadly and destructive sinkholes occurred after the draft Areawide EIS was released, the cumulative impacts of mining in Hillsborough and other counties, such as Polk, Hardee and Manatee Counties, were not considered for those sinkholes in that draft EIS. An example of some of the mine slurry/slime pits for only one of the mining companies—Mosaic—is shown in a recent figure that Mosaic submitted to the SWFWMD. I have included that figure of the slurry/slime pits as **Attachment C** in this letter. I added the bold black and red text, numbers and symbols to that figure, including the numbers for State Roads 674, 39 and 672, to make it easier to tell where those slurry/slime mine pits are located.

The large red “X” in the upper left (NW) corner of **Attachment C** is the approximate location of the southeast county garbage dump north of these mine slurry/slime pits where two large sinkholes opened. The first sinkhole opened near the dump in 1974 and is called the Balm sinkhole. That sinkhole was given the number 762 by the Florida Geological Survey. The web site <http://fcit.usf.edu/florida/maps/pages/11100/fl1131/fl1131.htm>, that includes sinkhole data since 2008, lists that sinkhole and sinkhole 863 as located at Lithia. Lithia is the community where I live. A second sinkhole opened near that dump in December 2010 and was assigned number 10-1068. Additional sinkholes have been reported within 5 miles of mine slurry/slime pits L1, L2 and L3 in the upper right (NE) corner of **Attachment C**.

These mine pits also are 8.4 miles south of the mine pit that Mosaic donated for use as a municipal water supply pit for Tampa Bay, so that Mosaic would not have to pay to fill that pit, as required by the mining permits. Although the taxpayers didn’t have to buy that mine pit, they have paid millions of dollars to try to keep the water that was intended for municipal water supply in that pit, because it keeps leaking/flowing back into the aquifer. I also added a red “X” showing the location of our property, the Killebrew ranch, directly south of Mining Unit (MU) 19. That mining is located on the north side of SR 674. I also added labels showing the location of Ft. Lonesome, 4 Corners Mine and Manatee County. The green areas in **Attachment C** are wetlands and streams. The draft Areawide EIS also did not consider the instability and inability of that Tampa Bay water pit to hold water for municipal supply as a cumulative impact of all of the mining in these counties. Those cumulative impacts need to be considered.

Groundwater Used by Mosaic Mining but Permitted for Other Projects

Countless groundwater withdrawal wells are located on the property across from our ranch and home, east of the two new sinkholes that collapsed in Seffner. These wells, primarily dug in wetlands, are shown as orange, blue and red dots on the map that I created from SWFWMD’s on-line “e-permit Viewer” web page (<http://www.swfwmd.state.fl.us/permits/>) and have included as **Attachment D**.

The first page of this 3-page attachment shows wells included in the purple cross-hatched area for the Environmental Resource Permit (ERP) that was issued by SWFWMD in 1988 to Woodson Farms as permit number 40-2795. The legend information explaining the symbols included in that map is included on pages 2 and 3 of **Attachment D**. To locate that information on the web page, I went to the bottom of the page for the Access Viewer tab and got a view of Florida by clicking the “Search Tool” at the top and search for the area of interest. In this case, my area of interest was SWFWMD permits north of our property. On that menu I went to WUP permit # and enter 11400 for the Mosaic mining permits. That displayed the permit area outlined in red. Then I zoomed on that area to see the Map Layers and chose the well permits., which provides well sites and well permit numbers.

These wells in the purple cross-hatched area originally were agriculture wells that were part of the Woodson Farm ERP. In reality, the ground water that is being pumped from those wells across from our ranch and property is being used as part of Mosaic’s mining operations, but those groundwater withdrawals are NOT accounted for as part of the groundwater withdrawals authorized under Mosaic’s Water Use Permit (WUP) for its mining operations. This is only one way that the mining operations are using MORE water than the 69.9 MGD average and 100 MGD maximum water allowed by the MegaWUP 11400.25 and these concealed water uses for mining could not have been considered in the draft Areawide EIS. Note that the “.25” at the end of that permit number means this is the 25th modification that Mosaic has gotten for that water use permit.

Groundwater Use Increased by “Sealing” Wells but not Accounted for After Mining Permits Issued

A second type of concealed water use for mining that could not have been considered in the draft Areawide EIS results because after the SWFWMD issues permits for mining and the water levels in the area dropped on the mining site and on private and public property in the vicinity of the mining site, the mining company could not reverse those drops in water levels to restore pre-mining water level conditions. At that point, SWFWMD staff determined that they would allow the mining companies again to withdraw more groundwater from what they call sealing wells. Withdrawals from those wells are called temporary withdrawals, but are allowed to continue for **FIVE YEARS**. Again, staff issues these approvals for additional concealed groundwater withdrawals for mining, without taking this issue to the Governing Board for review by Board members or for formal public comment.

My repeated requests to staff for the total amount of water being withdrawn from the wells they call sealing wells haven’t produced that information. In fact, SWFWMD staff told me that the District doesn’t even have meters or any other devices on those wells to monitor the amount of water that is being withdrawn.

Groundwater Use Increased by What is Called Augmentation but not Accounted for After Mining Permits are Issued

There also is a third type of concealed water use for mining that could not have been considered in the draft Areawide EIS. The third type is increased water use by “augmentation” wells. Please refer to the entries in **Attachment A** for my examples dated 11/20/09 and 3/19/13. When the mining dewateres the wetlands and the surficial aquifer, which is unavoidable, the SWFWMD authorizes increased groundwater withdrawals for the mining companies as “augmentation,” as if we don’t already know that the groundwater withdrawals for mining are one of the primary causes of the dewatered wetlands, streams and local residential wells. Again authorization for what they call augmentation is from the staff, not from the Governing Board. The water they say is used for augmentation is not deducted from the amount of water approved for mining under the WUP and further reduces ground water.

No Records of Actual Groundwater Withdrawals

It should be obvious that additional groundwater withdrawals cannot possibly restore pre-mining water levels, and will lower groundwater levels even more. Your staff has not considered the role of groundwater withdrawals from the countless wells like these, combined with the giant holes in the aquifer system caused by mining as a cause of these sinkholes. In fact, **permits that are issued under the “40-” numbering system do not even go before the SWFWMD Governing Board for review and denial or approval, with notice to the public. Those permits are approved by staff and issued by the Executive Director of SWFWMD. There isn’t even any requirement that the SWFWMD consult with or notify other agencies, such as the COE, EPA and USFWS so that the indirect and cumulative impacts of those staff-issued permits can be known, let alone considered, for existing and proposed permits, by those agencies.**

Harm to Existing Users from Mining Dust

The harm that has been inflicted by the mining on my family and our property, as existing users of these waters that predated mining in this area, is not restricted to the dewatering of our wetlands, streams and springs. Often we are held hostage in our home, unable to go outside to work on our ranch or even enjoy our rural property because the mining dust is so thick we can’t breathe. **Attachment E** includes three photographs that I took to show you how bad the mining dust is. The first photograph (**Attachment E1**) shows one of our 4-foot high barbed-wire fences almost completely covered with the dust that blew onto our property from Mosaic’s mining operation. The second photograph (**Attachment E2**) shows a dense mining dust cloud over the Mosaic mining area, north of our property in the vicinity of the cell phone tower. Additional evidence that this dust is being created by Mosaic is shown in my third photograph (**Attachment E3**). This photograph looks like a blizzard, but it was taken in April last year at the intersection of SR 39 and SR 674 in Ft. Lonesome. Refer back to **Attachment C**, which shows that location is in the middle of Mosaic’s mining area. Mosaic tried to blame these dust blizzards on the Florida Department of Transportation (FDOT), claiming it was “road construction” dust, but the FDOT refuted those accusations, confirming that there was no road construction in that area during that time.

Harm to Existing Users from Mining Noise

Noise from the mining draglines and other equipment also holds us hostage, sealed in our homes with the windows closed, but still we can’t sleep from the mining noise that drones on through the night. See **Attachment A** for examples of the continual harm that we have suffered from mining noise.

Economic Harm to Existing Users from Mining

We also have suffered severe economic harm because the dewatering of our property has made it impossible for us to grow hay to feed our cattle. We cannot afford to buy and import hay to feed our cattle. Apparently the SWFWMD staff hasn’t been informed about state laws and SWFWMD rules that make it illegal for a permittee to harm existing water users like my family. That is evident because one of my most recent complaints of harm to the SWFWMD included the fact that we can’t grow hay to feed our cattle because the mining has dewatered our property and SWFWMD is allowing Mosaic to wait until 2014 to try to restore the water levels in the area where our ranch and home are located. The response that I got from Andrea Hughes, the Environmental Scientist for the SWFWMD’s Water Use Permit Bureau in the Regulation Division, was that they don’t regulate hay. See **Attachment A** for more details about the failure to resolve our economic harm.

Violations of Laws, Rules and Regulations

We have filed complaints with your agencies repeatedly since 1997 over the harm that is being inflicted on our family and property by mining that has dewatered our property, streams, wetlands and springs; prevented us from growing hay to feed our cattle; resulted in mining dust so thick that it has buried our cattle fences; and mining equipment noise so constant and loud that we can’t sleep at night. The SWFWMD staff have documented that the lowered water levels are caused by the mining and are permit violations, but none of these problems have been fixed, the mining continues and more mining permits are being considered. **Attachments A and F** include examples of our complaints and documents confirming that Mosaic has violated conditions of permits it received for the mining. Obviously these adverse impacts were not considered by the agencies that permitted the mining.

The problems described in this cover letter and attachments are clear violations of federal, state and local laws, rules and regulations, including the failure of the agencies to consider indirect and cumulative impacts of existing mining. Non-federal examples of these violations include **Florida Statute 373.223(1)(b)**, and SWFWMD's **Rule 40D-2301, Florida Administrative Code, which require that the proposed use of water must not interfere with any presently existing legal use of water**. Our property was an "existing legal use of water" at the time your agencies issued permits for mining in our rural neighborhood. In fact, 6.1 Standard Permit Condition 13 on page B-6 of the SWFWMD's Manual requires permittee of all Water Use Permits to mitigate "any adverse impact to environmental features or off-site land uses" and includes the following three examples of included adverse impacts:

- a. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams, or other watercourses.
- b. Damage to crops and other vegetation causing financial harm to the owner.
- c. Damage to the habitat of endangered or threatened species.

Clearly the SWFWMD standard permit conditions require that we be compensated for not being able to continue growing hay on our property to feed our cattle because the permitted mining has lowered the water levels on our property. Standard Permit Condition 12 on page B-6 of the SWFWMD's Manual makes it even more clear by requiring that the permittee is responsible for any adverse impact to existing legal users, including "reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams or other watercourses," but nothing has been done to restore the levels and flows of our wetlands, springs and streams.

The SWFWMD's 40D-4.302 Additional Conditions for Issuance of Permits (1)(a)1 requires that the permitted activity will not "adversely affect the public health, safety, or welfare or the property of others." I have provided documentation since 1997 that the mining has had adverse affects on the health, safety, welfare and property of my family.

The SWFWMD's "Water Use Permit Information Manual (Manual), Part B, Basis of Review" (BoR part B) 6.2 Special Permit Conditions, 4. Requires that all complainants "must receive an investigative report, including any action to be taken." Those Special Permit Conditions also require that "The permittee shall file a report of the complaint, the findings of facts, and any mitigating action taken or to be taken by the permittee, to the Director, Resource Regulation Department, for review and approval within 15 days of the receipt of any complaint. Pages 18 and 19 of Mosaic's March 27, 2012 WUP No. 20011400.025 also includes "Instructions for water resource complaints." Those "WATER RESOURCE COMPLAINT INSTRUCTIONS" require that, "**The complainant's problem shall be fully corrected within 15 days of complaint receipt.**"

We have never received a copy of any reports or action by the permittee that involved fully correcting the damage that the mining has caused to my family's property, health, safety, welfare. This is another example of mining permit violations.

Section 4.2 A. 3. of the SWFWMD's Manual, BoR Part B also requires the applicant to submit a mine plan for the term of the permit and evaluate changes to the mine plan for off-site wetlands and wetlands to be preserved on-site or created as required by FDEP permits. The SWFWMD letters to Mosaic and the data confirm that the mine plan and reclamation plan have failed to prevent impacts to on-site and off-site wetlands and water levels. See **Attachment F** for examples of these letters.

The mining also has violated the federal antidegradation regulations including requirements of 40 C.F.R. § 131.12(a). Antidegradation requirements apply to all factors that affect the water quality of surface waters, including water quality changes resulting from water flow reductions and diversions. *PUD No. 1 of Jefferson County v. Wash. Dep't of Ecology, et al.*, 511 U.S. 700, 713-20 (May 31, 1994). An appendix to EPA's Water Quality Standards Handbook, (December 1983) is available at http://water.epa.gov/scitech/swguidance/standards/upload/206_12_01_standards_antidegqu.pdf and includes "Questions and Answers on Antidegradation," including the following (emphasis added):

No activity is allowable under the antidegradation policy which would partially or completely eliminate an existing use whether or not that use is designated in a State's water quality standards. ... Species that are in the water body and which are consistent with the designated use (i.e., not aberrational) must be protected, even if not prevalent in number or importance. Nor can activity be allowed which would render the species unfit for maintaining the use. Water quality should be such that it results in no mortality and no significant growth of reproductive impairment of resident species.

....

Existing uses must be maintained in all parts of the water body segment in question other than in restricted mixing zones.

...

If a planned activity will foreseeably lower water quality to the extent that it no longer is sufficient to protect and maintain the existing uses in that waterbody, such an activity is inconsistent with EPA's antidegradation policy which requires that existing uses are to be maintained.

What we have been subjected to as a result of this mining and the failure of agencies to enforce permit conditions, rules, regulations and laws is equivalent to the cruel and unusual punishment that is prohibited under the Eighth Amendment of the Constitution and we haven't even been charged with or convicted of any crime. The Cruel and Unusual Punishments Clause of the Eighth Amendment prohibits the imposition of inherently barbaric punishments under all circumstances. In fact, we have been punished and tortured by this mining since the mining began even though torture is forbidden under the Eighth Amendment. The role of these mining activities in causing sinkholes in this area, like the ones that killed the Seffner man and destroyed those homes and property, also is cruel and unusual punishment for those people.

Supplemental Comments and New Information for the Areawide EIS

On June 30, 2010, I sent an electronic comment letter and on March 23, 2011, I made a presentation to the US Army Corps of Engineers (COE) and US Environmental Protection Agency (USEPA) in Lakeland, Florida during the public comment meeting for the Areawide EIS to identify impacts of existing and proposed mining in our area. This cover letter and attachments are supplemental comments and new information for the official record of the Areawide EIS.

My supplemental comments and new information provide sufficient evidence that there is no agency accountability for cumulative impacts from the existing mining; that the existing impacts already have resulted in the violation of federal, state and local laws and that the permittees are unable to reverse the damage the mining has caused. In fact, there hasn't been any accounting at all for the total loss of water from the regional aquifer system due to mining. Without an accounting of the total water lost for each wetland, stream, local surficial aquifer and the regional aquifer system, no meaningful evaluation can be conducted in the Areawide EIS and additional deadly sinkholes that also cause extensive damage to personal property will increase. For additional details regarding this problem please refer to my examples included in my attachments.

Requested Agency Action

I am requesting that your agencies issue no additional approvals for mining or any mining-related water use including secret water use for what the agencies call augmentation of temporary wells or sealing wells or surface water use. I'm also requesting that all permitted mining water use and excavations be stopped in the SWFWMD region until all of our water levels and flows have recovered. **Standard Permit Condition 2 in 6.1 of SWFWMD's Manual clearly states that if a permitted use "does impact an existing legal use of water, the Governing Board shall modify this permit or shall revoke this permit."** I am requesting that the Governing Board begin by revoking Mosaic's mining permits.

I'm also requesting that the final Areawide EIS conclude that the cumulative adverse impacts from mining already have resulted in violations of federal and state laws and that no new mining will be permitted. I'm also requesting that Mosaic's federal mining permits be revoked.

I have included a copy of Attachments A through E in the electronic copy of this letter. I will mail a CD with a copy of this supplemental comment and formal complaint letter and all attachments to Col. Alan M. Dodd, District Engineer, in the Jacksonville Office of the COE and to Gwendolyn Keyes Fleming, Regional Director of the USEPA in Atlanta, for the official record of the Areawide EIS. I'll also mail a CD with a copy of this letter and all attachments to the SWFWMD Governing Board Members.

Sincerely,



Norma Killebrew
PO Box 129
Lithia, FL 33547

Attachments:

- A. List of examples of Mosaic permit, rules and law violations since 1997
- B. Media description of new 2013 sinkholes in Seffner, Hillsborough County, Florida
- C. ERP map of countless Mosaic withdrawal wells across from Killebrews and east of new sinkholes
- D. Map of Mosaic mine slurry pits east of new sinkholes in Seffner
- E. Photographs taken by Killebrew of mining dust
- E1. Photograph of Killebrew Ranch with airborne mining "dust" covering barb wire fence
- E2. Photograph of Killebrew Ranch with airborne mining "dust" cloud created from adjacent mining
- E3. Photograph of airborne mining "dust" blizzard in April at Ft. Lonesome intersection of SR 39 and 674
- F. Letters and other supporting documents of mining violations and harm to existing users

cc:

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ATTACHMENT A
**Killebrew Summary of Complaints, Permit Violations and Other Communications
with the USACOE, SWFWMD, FDEP, EPCHC and Hillsborough County BOCC
Related to Adverse Impacts of Mosaic's Mining Operations***

1997

3/31/97 In the Southwest Florida Water Management District (SWFMWD) repository, Mrs. Killebrew located a complaint worksheet filed with SWFWMD from Gary Serviss of Mulberry, Florida regarding his spring-fed cattle pond that stopped flowing following mining on Bethlehem Road in December of 1996. At Hillsborough County Board of County Commission (BOCC) hearings during this time period, Mosaic repeatedly stated its operations did not harm water sources.

4/17/97 In the SWFWMD repository, Mrs. Killebrew located a packet of paperwork involving a certified letter received by Mr. Balser of SWFWMD from attorney C. Feer, Esq., representing Maddox Groves, Inc. The letter stated the dewatering near the Haynesworth Mine has caused lowering of ground water 20 feet in an adjacent pit used in mine cuts and the subsequent "curling of leaves" in Maddox Groves trees. Attorney Feer threatened legal action. Mosaic continued to state, under oath at BOCC hearings, that there were no water problems.

2004

8/27/04 FDEP Kevin Claridge, Environmental Manager, FDEP, wrote a warning letter to Mosaic/IMC of possible violations involving two instances of unauthorized discharges into the Little Manatee River and Alderman Creek. The DEP fine was a paltry \$1500.00. That letter was the result of Mrs. Killebrew's search of SWFWMD public records.

2006

no date Dust complaint presentation to BOCC by Mrs. Killebrew describing proximity of the Mosaic/Ag-Mart Farms to the Killebrew ranch. Killebrew described dust storms and extreme water runoffs from Mosaic/Ag-Mart lands and soil erosion that led to the silting of the Little Manatee River. The SWFWMD and BOCC ignored our complaints of those violations of SWFWMD rules and permit conditions by Mosaic/Ag-Mart Farms on nearby land. Specifically, 6.2 Special Permit Conditions, 4. Investigating Complaints Condition of the "South West Florida Water Management District Water Use Permit Information Manual, Part B Basis of Review" (BOR), includes the following requirement: "The permittee shall file a report of the complaint, the findings of facts, and any mitigating action taken or to be taken by the permittee, to the Director, Resource Regulation Department, for review and approval within 15 days of the receipt of any complaint." No record of any of those reports were found in the SWFWMD files. Additionally, pages 18 and 19 of WUP No. 20011400.025, dated March 27, 2012, also includes the following statements:

2. ...the Permittee shall supply the complainant with any water necessary for health and safety purposes, such as drinking water, within 72 hours of complaint receipt.

A. Impacts to wells: The complainant's problem shall be fully corrected within 15 days of complaint receipt.

4/3/06 Mrs. Killebrew called EPCHC to register formal complaint of dirt in the air and possible harm to family. EPCHC stated they would bring it to Mosaic's attention, but the problem was not resolved.

4/9/06 Mrs. Killebrew called Michael Bonomo, the Adjustor for Ag-Mart/Mosaic (941-737-5555), to register a formal complaint about the severe dust problems and requested an inspection to evaluate the severity of the sand and dust and water problems.

6/28/06 Mrs. Killebrew again called the Insurance Adjustor's office for Ag-Mart/Mosaic, but repeatedly was told that the person handling that complaint/claim was "out of town."

8/19/06 Letter by Killebrews to EPCHC Air Management Division citing Ag-Mart/Mosaic's particulate air quality violations from sand and dust and violations from over-pumping of ground water. Mrs. Killebrew sent copies of the complaint and photographs of the particulate air quality violations to both Ag-Mart Farms and Mosaic. The photographs included a picture of airborne sand more than four-feet deep covering a barbed wire fence adjacent to the Killebrew property. Ag-Mart filed response to SWFWMD citing water pumpage was for "dust control" to keep sand and dust (aka particulate matter) down and that they planted a cover crop. No evidence of either was noted by the Killebrews. Mrs. Killebrew found Ag-Mart/Mosaic's response in SWFWMD's document repository. Ag-Mart's response was filed with SWFWMD and did not reference the Killebrew complaint. The Killebrews never received any response to the above problem from any agency or from Ag-Mart/Mosaic/IMC.

2007

1/30/07 Mrs. Killebrew called EPCHC and left a voice mail message regarding another air quality violation on Ag-Mart/Mosaic land from the burning of plastic, resulting in ashes from the burnt plastics on the Killebrews' car, home and property. Photographs of this violation were mailed to EPCHC. The Killebrews received no response from Ag-Mart/Mosaic or EPCHC.

2008

1/21/08 Mosaic consultants conducted well testing for water quality and water levels on Killebrew property. Mosaic tested the well in Killebrews' yard and the well located in the Killebrews' field. Gary Uebelhouer with Mosaic's contractor, Environmental Consulting & Technology, Inc. (ECT) provided a paper record of the results for both wells for the following: odor, No3, metals, coliforms, TOC, color. TSS, sulfate, Mod, Gross alpha radiation conditions. That record indicated all parameters were in the normal range with the following exception: Gross Alpha Radiation was 18-22 and Radium 226+228 was 7.9-12.7 and that E. coli bacteria was found in both wells that were tested. The Killebrews then had their well water tested for bacteria using Advanced Environmental Laboratories, Inc. in Tampa. That lab found no coliform bacteria. Mr. & Mrs. Killebrew and Mr. Hardy were the only two families notified of bacterial contamination of the wells tested during the permitting of DRI 263. Coincidentally, those were the two families who led the protest against Mosaic's mining. None of the wells for those families have tested positive for bacterial contamination since the tests by Mosaic's contractor, ECT. Mosaic's water quantity tests on the well used for the Killebrews' home

consisted of measuring how fast a five gallon bucket would fill. No information on water levels was provided to the Killebrews.

2/26/08 Mrs. Killebrew filed for a hearing with the State of Florida, Division of Administrative Hearings (DOAH) regarding SWFWMD water use permit 20009017.006 for Mosaic/Ag-Mart farms adjacent to Killebrews' home and farm because Mosaic tried to renew that groundwater withdrawal permit illegally. According to SWFWMD permitting rules, when a lessee leaves leased property, any existing water permit either is terminated or re-issued promptly in the name of the lessor. Mosaic sent a letter to SWFWMD designating Ag-Mart as a Mosaic representative with written permission to renew the water use permit in the name of Ag-Mart Farms for ten (10) additional years when Ag-Mart was no longer on Mosaic land. When the lease on leased land is terminated there is a name change on the permit to reflect that. The well should have been renewed under Mosaic as Mosaic stated publicly at a BOCC meeting that Ag-Mart was no longer on the property across from the Killebrews. The hearing was filed as Killebrew vs. Mosaic/ Ag-Mart, but Ag-Mart had a name change to "Santa Sweets" due to pesticide violation citations.

The DOAH hearing was scheduled for April 14, 2008, but was dropped because Mosaic's attorneys, Holland and Knight, sent a letter stating that Mosaic no longer needed to pump water from that well. Mrs. Killebrew discovered the referenced duplicity by reviewing documents in the SWFWMD records files.

The Killebrews had experienced problems related to that well, because ground water was being pumped from that well around the clock for weeks, with the water being discharged from Mosaic/Ag-Mart property as surface water being channeled under St. Rd. 674 and down a ditch into the Little Manatee River. Those discharges resulted in severe siltation in the river. Mrs. Killebrew discovered additional documents in the well permit file allowing Mosaic/Ag-Mart to increase the amount of ground water they pumped to use that additional water to try to control Mosaic's air pollution problems from dust/particulate related to those complaints submitted by the Killebrews. Ag-Mart acting as Mosaic's agents stated in those documents, discovered in the SWFWMD files by Mrs. Killebrew, that the additional water they needed to pump was needed so they could plant a cover crop to prevent the dust/particulate violations referenced in the complaints by the Killebrews. So the air pollution complaints by the Killebrews were used to by the SWFWMD to authorize withdrawing even more water, despite the repeated complaints by the Killebrews about the dewatering and the Killebrews were not even notified of those authorizations by the SWFWMD. See the related entry dated November 20, 2009 regarding well 20009017.006.

5/21/08 Mrs. Killebrew sent an email complaint to Mr. Kerr of SWFWMD regarding lack of SWFWMD oversight and lax regulation resulting in the demise of the Little Manatee River and trees dying in wetlands. Complaint also described adverse impacts on wetland and springs on the Killebrews' property. Mrs. Killebrew sent a photograph to the SWFWMD and the Governor of the vast desert across the road at Mosaic/Ag-Mart, showing the pile of sand covering the top of the barbed wire fence on the Killebrew property deposited as "particulate matter" and illustrating that "best management practices" are not working. The picture was of sand topping a barbed wire fence...sent to the governor as well. The email response from Kerr was that there were no permit violations and that Mosaic's request for renewal of pumping permit 20009017.006 was withdrawn.

5/22/08 SWFWMD's Rick McCleery (Rick.McCleery@swfwmd.state.fl.us) emailed an answer to Killebrew's question about **exactly** what SWFWMD will do about the Little Manatee River going dry. He sent an email to Mrs. Killebrew telling her to contact Ms. Vazquez at FDEP as mining falls "within the jurisdiction of the FDEP, not water management districts." Mr. McCleery received photographs of the Killebrews' dead trees in their wetlands and the dry Little Manatee River...as did the governor.

5/23-6/1/08 FDEP Mrs. Killebrew sent emails to Ms. Pamela Vasquez (Pamela.Vasquez@dep.state.fl.us), as instructed by Mr. McCleery of SWFWMD on 5/22/08, asking the same question - what will the agencies do about the mining causing the Little Manatee River to go dry and killing their trees. No response was received about how these problems would be solved.

5/23/08 Ms. Hart, with EPCHC, emailed an answer to the Killebrews' question regarding establishing successful wetlands. She sent a cc of her email to B. Stetler, P. Owens and J.M. Stevenson of Hillsborough County, including a detailed description of the local process. Ms Hart's email stated that "one cannot achieve a complete restoration of a mature wetland system that has been impacted."

5/30/08 Killebrews received a packet from EPCHC summarizing inspection of the Little Manatee River by EPCHC staff, Pete Owens, Dawn Hart, Colin Strickland (intern, Legal) and Milutin Jeftie (intern ISYS), and PGMD staff, M. Stevenson, Land Excavation/Phosphate Mining, confirming little flow of the Little Manatee River and tree kill. The summary included photographs furnished by Ms. Hart.

5/31/08 email from Pamela Vazquez, FDEP to Mrs. Killebrew, with a copy to John Coates, FDEP, to address the Killebrews' concerns regarding the demise of the Little Manatee River and other water concerns related to the mining. Later, Mrs. Killebrew received a phone call from Ms. Vazquez, stating that Mr. McCleery would be arriving in the Four Corners mining area near the Killebrews' property to check the status of the Little Manatee River. The Killebrews received no response or follow up from McCleery.

6/6/08 EPCHC requested by telephone that the Killebrews allow Ms. Hart and Mr. Owens to visit the Killebrews' property at 10:00 a.m. and to meet with the Killebrews. During the meeting, Ms. Hart stated that there were some problems with lack of flow in the river.

6/18/08 SWFWMD record request was submitted by Mrs. Killebrew re: SWFWMD's Request for Additional Information (RAI) questions to Mosaic (2B Flow Alterations) with SWFWMD asking Mosaic about the effects of rainfall/runoff capture and recirculation on flows in all onsite rivers and associated tributaries, Mosaic's response. The record included no "Independent" scientific evaluation of the problems resulting in the reduced river flows and tree deaths.

9/15/08 Mrs. Killebrew sent an email to Dawn Hart with EPCHC about the Board of County Commissioners (BOCC) meeting that day regarding disruptions of underground streams and

Deedra Allen's (Mosaic) interpretations of "new" mining and "vested rights." Mrs. Killebrew asked why the Killebrews' "vested rights" were not being considered since the Killebrews owned their property and farm prior to mining by IMC and Mosaic. Mrs. Killebrew also spoke at the BOCC meeting that day asking why they were not considering the "vested rights" of the Killebrews.

9/19/08 Mrs. Killebrew received an email from Dawn Hart, EPCHC, stating that Dawn Hart had located a publication regarding SWFWMD's springs and streams water monitoring program published May 2001. That publication, by the SWFWMD's Water Quality Monitoring, was entitled "The Hydrology and Water Quality of Select Springs in the Southwest Florida Water Management District." Mrs. Killebrew was investigating what affected springs on and around the Killebrews' property. Trees died where the slurry water is discharged at locations into streams. Those discharges are authorized under the NPDES permit.

12/18/08 Mrs. Killebrew sent an email to FDEP's contact person for legal notices, Linda Henderson (Linda.Henderson@dep.state.fl.us), stating that the response time for legal notices require prompt access to records. Mrs. Killebrew requested to see the written response from EPA and papers filed by Mosaic. A copy of the email was sent to Mosaic, Lisa Lannon and Richard Hicks (Richard.W.Hicks@dep.state.fl.us). Mrs. Killebrew was referred to Orlando Rivera at FDEP.

12/19/08 Mrs. Killebrew sent an email to Mr. Rivera, FDEP, questioning the point of approval by FDEP when approval already was given prior to the BOCC hearings. Mrs. Killebrew also made a complaint with FDEP about legal notices that lack a specific person to contact and was put on Rivera's email list of people receiving email notices for mining applications in Florida. Mrs. Killebrew also was advised to contact Sam Nunn, with the USEPA at the Atlanta Federal Center as well. Mr. Rivera assured the Killebrews that all regulations are enforced to ensure that "reasonable assurances" have been provided by applicants before the agencies take official agency action on mining permits.

2009

1/20/09 Mrs. Killebrew sent emails to Dawn Hart Pete Owens, with EPCHC and Robert Kane, with USGS (rkane@usgs.gov) regarding further questions about the demise of the Little Manatee River. The question was why the response to every complaint about the river by the Killebrews was that the problem was the result of "drought" conditions? Has there been a "drought" in their area every year since 1997? Mosaic responded to SWFWMD's RAI questions for the WUP # 00114.24 application for groundwater pumping that 2002 and 2003 were the worse drought years for a decade.

3/9/09 Mrs. Killebrew sent an email to Dawn Hart, EPCHC, regarding the agencies allowing the mining of wetlands **east** of the Killebrews' ranch property at the Little Manatee River and substituting mitigation wetlands **west** of the Killebrews' property and the adverse impacts to the Killebrews' property and to the river. The email requested the justification for eliminating water from wetlands on and near the Killebrews' property and causing reductions of water in the Little Manatee River.

3/12/09 Dawn Hart, EPCHC, sent an email to the Killebrews indicating that the application for mitigation from up river to down river, past the Killebrews' ranch had not been submitted to Hillsborough County, but provided no answers to the Killebrews' questions.

3/18/09 Mrs. Killebrew made another Public records request to SWFWMD at PublicRecords@watermatters.org and received public request #907167, directions for record requests and a Bartow office number.

4/25/09 The Killebrews observed that the Little Manatee River was completely dry.

5/19/09 Mrs. Killebrew called EPCHC with another complaint about water level problems related to mining.

11/20/09 On 3/19/13 Mrs. Killebrew discovered a document filed under 2009 on the WUP online site document repository that Mosaic, through attorneys Holland and Knight, filed to "retire" the "agriculture" well designated as 20009017.006 which pumped "521,000 gpd" will "offset" the withdrawals from the replacement sealing water well, which will draw a mere 600,000 gpd more. Mr. and Mrs. Killebrew registered another complaint about Mosaic's lessee running pumps seven days a week and 24 hours a day for weeks on end. EPCHC also was called in reference to the water exiting this adjacent property and ERP site (STR: 11 32 21) and eroding the ditch and silting the Little Manatee River, as well as silting wetlands on the Killebrew property. Tomatoes were growing in wetlands on the Killebrews' property because of the water running off of that property. The response from EPCHC's representative was that the Killebrews should be grateful that the wetlands were getting the water and SWFWMD made no attempt to stop the illegal use of well permit 20009017.006 by Mosaic. In fact, Mosaic's attorneys used the Killebrews' complaint to accomplish their original Intent, which was to divert water already being used by existing private property owners, wetlands and streams in that area for the sole use of Mosaic's mining operation. The Killebrews were never informed by SWFWMD, Mosaic or in any way about this illegal use of water by Mosaic.

2010

4/30/10 In 2013, Mrs. Killebrew discovered at the WUP online site a copy of letter dated 4/30/10 from Mark Hurst, in SWFWMD's Mulberry office, to Tara Crews of Mosaic stating that the piezometers indicate pre-mining water levels are not being maintained in Hopewell or Fort Lonesome mining areas and stated that notice was also given of those water-level violations in 2009. Lonesome piezometer Numbers include 2025 through 2030, 2039, and 2044.

7/14/10 Mrs. Killebrew sent an email to Orlando Rivera, Professional Wetland Scientist (PWS), Program Administrator Mandatory Phosphate Section, Bureau of Mining and Minerals Regulation, FDEP, asking for an online repository for variances/modifications for existing phosphate mining permits. Mrs. Killebrew asked also about the numbering and meanings of variances.

7/20/10 Mrs. Killebrew received an email response from Mr. Rivera, FDEP, that referred Ms. Killebrew to Lisa Henderson for a repository of CD's of permits. Mr. Rivera's email also explained numbering system of permits.

Mrs. Killebrew sent another email to Orlando Rivera, FDEP, with a question concerning the meaning of “bridging area permit” because there was no information describing what a “bridging area” is.

Mrs. Killebrew also received an email from Mr. Rivera, FDEP, explaining that the “bridging area” refers to Mosaic’s land covered under wetland resource permit #128272001 issued in 1997 and modified in December 2008. Two more modifications were issued in July 2010. Mr. Rivera stated this (bridging area) is purely for reference and that it is not a “change” to the permit, *but he did not explain what the “bridging area” actually is.*

7/25/10 Mrs. Killebrew sent an email to Mr. Stevenson, PG, Development Review Division, Development Services Department, Hillsborough County BOCC (StevensonJM@hillsboroughcounty.org) with questions she had regarding Mosaic’s massive slurry “ponds” located within five miles of their ranch and safety measures to be followed during a hurricane.

7/27/10 Mrs. Killebrew received an email from Mr. Stevenson at EPCHC (StevensonJM@hillsboroughcounty.org) in response to Mrs. Killebrew’s email about slurry ponds and safety. Mr. Stevenson’s response was similar to the patronizing response from Mr. Zumani of FDEP indicating that we should not be concerned with these matters because the government will “protect” us.

7/29/10 Mrs. Killebrew sent an email to FDEP, Sam Zemani (Sam.Zemani@dep.state.fl.us) in response to his earlier email that month to Mrs. Killebrew, where Mr. Zemani stated that Mrs. Killebrew should believe that the government would take care of her family and neighbors. Mr. Zemani’s email also provided more details about slurry pits and requirements. Mr. Zumani directed Mrs. Killebrew to the repository site for the FDEP located in Hillsborough County on Telecom Parkway, Temple Terrace, Florida. He stated that the design data for each pit is available for review and that “contingency plans” were updated annually as required by Rule 62-672,550, F.A.C. Mr. Zumani stated FDEP’s responsibility was to ensure that the slurry pits are operated safely.

9/13/10 Mrs. Killebrew sent an email to FDEP’s Sam Zemani (Sam.Zemani@dep.state.fl.us) in which she detailed a meeting with Mosaic representatives regarding lack of emergency planning considering that the Killebrew farm is surrounded by about 7 slurry “ponds” each consisting of about 1500 acres and with berms about 40 feet high when each is fully established. The county emergency plans had mistakes, which were detailed in Mrs. Killebrew’s email, and lacked details for residents of the Four Corners mining area. Mrs. Killebrew’s email pointed out two huge sinkholes within five miles of Mosaic’s slurry “ponds.” Mosaic representatives that met with the Killebrews included Curt Wade PE, Larry Odem, Geotechnical Superintendent, and Robert Van Olinda, Senior Ecologist.

Mrs. Killebrew was told by Mosaic representatives that Mosaic employees would alert the Killebrews by coming to their ranch and warning them if the nearest slurry pit (about 1500 acres when complete) suffered a breach. The Killebrews’ property is located within a four-mile range of six pits, each approximately 1100 to 1700 acres in size. The Killebrews pointed out that the closest pit was less than two miles and uphill from their ranch. Mosaic representatives said that

the Killebrews would have hours to evacuate.

2011

3/1/11 Mrs. Killebrew conducted a document search of SWFWMD's online WUP site and discovered a letter dated 3/1/11 from Michael Balser, SWFWMD's Water Use Regulation office, to Mr. Jellerson, Assistant Vice President for Mosaic. The subject of the letter was water use permit compliance and an amended request for an alternative groundwater source, apparently discussing use of different aquifers for alternative water source as well as using wells for wetland preservation. The letter dictates timelines and well recovery levels and states that the groundwater levels are below levels mandated by SWFWMD. Water levels in the piezometers indicate the water table has been lowered from adjacent mining. The Killebrews and other residents near the mines were not notified about these compliance violations or the requested changes in Mosaic's permit conditions.

4/23/11 Mrs. Killebrew sent an email to EPCHC with additional photographs of the continuing airborne sand and dust problems at Four Corners.

5/11/11 Mrs. Killebrew called EPCHC and filed another complaint regarding dragline noise, reporting that her grandchildren were unable to sleep at night.

5/25/11 Ms. Hallgren, EPCHC scheduled an appointment with the Killebrews at 10:00 a.m. to visit the Killebrews' property. Ms. Hallgren heard dragline noise and saw how close the dragline was to the Killebrews' property.

6/17/11 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC (Hallgrenj@epchc.org), regarding the continuing airborne sand and dust and dragline noise from Mosaic's mines. The email described considerable noise and referenced the photographs sent to Ms. Hallgren. Deedra Allen, handling permitting for Mosaic, stated to the BOCC that Mosaic's berms had been planted with vegetation and Mosaic representatives testified that the farmers produce the airborne sand and dust. Residents testified that they did not see these green berms in the Ft. Lonsome mining area. Mrs. Killebrew referred to thousands of acres of Mosaic's mining compared to a few hundred acres at most that were being farmed. Ms. Killebrew included photographs of Mosaic's mining berms that have no stabilizing vegetation on them.

6/21/11 Mrs. Killebrew received an email from Ms. Hallgren, EPCHC, stating that Killebrews' complaint about dragline noise was entered into the database. She related that she had spoken to Mosaic about the Killebrew complaint in May. Mosaic responded by sending a study done by consultants, ECT in June 2010 and EPCHC was meeting with Mosaic on June 29th. The Killebrews received no further information regarding that study. Killebrews were asked if Mosaic and EPCHC would be allowed on Killebrew property.

6/22/11 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC allowing Mosaic access to the Killebrews' property in response to continuing violations of airborne sand and dust and dragline noise.

7/4/11 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC (HallgrenJ@epchc.org)

citing fresh black dirt deposited on Thursday, June 30, 2011, as a response to the above comment that residents do not see green berms in the Ft. Lonesome mining area. Mrs. Killebrew also included a photograph showing sand moving en masse onto the Killebrews' property from Mosaic's mine, holding the Killebrews hostage in their own home.

7/10/11 Ms. Joan Hallgren, EPCHC Noise Division, called Mrs. Killebrew and stated that Mosaic was to be notified prior to situating noise monitors. As a result of that notification, Mosaic shut down the dragline just as the monitors were being placed on the monitoring date and subsequently the dragline was moved further east before additional dates could be requested for noise monitoring. Mrs. Killebrew was told that for the first three monitoring periods, Mosaic had to be told the date and time prior to noise monitoring.

7/12/11 Ms. Hallgren, EPCHC, sent an email to Mrs. Killebrew stating EPCHC will monitor dragline noise next Saturday night, but Ms. Hallgren also notified Mosaic that the dragline would be monitored next Saturday night. Again Ms. Hallgren stated that Mosaic must be notified for the first three times that EPCHC monitors, then monitoring can be done without notification.

7/16/11 Ms. Hallgren, EPCHC, set up monitoring equipment on the Killebrews' property and the adjacent dragline shut down within 30 minutes of Ms. Hallgren's arrival. Mosaic's crane was moved to another location before the noise data could be gathered. Ms. Hallgren related this lack of monitoring data to Ms. Killebrew by telephone.

8/10/11 Mrs. Killebrew called Ms. Joan Hallgren, EPCHC Noise Division, regarding the deafening noise of Mosaic's dragline that was close to the Killebrew property. Ms. Hallgren stated she was at the Killebrew property two weeks earlier to hear the noise. The dragline moved again, back to the vicinity of the Killebrews' property after this complaint.

12/21/11 Mrs. Killebrew sent another email to Mr. Orlando Rivera, FDEP Program Administrator Mandatory Phosphate Section, Bureau of Mining and Minerals Regulation, Killebrew again requesting the information on the "Bridging Permit Areas."

12/23/11 Mrs. Killebrew received an email from Orlando Rivera, FDEP, finally explaining "bridging" which is a confusing mishmash of several wetland permits issued in 2001 and modified in 2010 with parts of the mine permitted in 2008. He said some areas have been mined and corridors have not and some reclaimed. This seems to mean that some areas are mined, some are "saved" for wildlife, and then mined later. Mrs. Killebrew sent the same bridging question to numerous state regulators attempting to understand what "Bridging Permit Areas" means, but received no real understandable explanation, although this question had been asked repeatedly since 2010.

2012

3/6/12 Mrs. Killebrew emailed to EPCHC two photographs she had taken of recent severe conditions of airborne sand and dust from Mosaic's mining.

4/8-9/12 Mrs. Killebrew notified EPCHC again that her family was being subjected to dust/particulates. Mr. Dan Hardy, one of the Killebrews' neighbors, also reported severe airborne

dust and sand from Mosaic's mining operation located just east of Ft. Lonesome. Mr. Kirkland of Hardee County, an acquaintance of Mrs. Killebrew, called Mrs. Killebrew and told her that his renter was an employee of Mosaic who worked on the slurry pit located about two miles from the Killebrew land and that employee was complaining that the dust/particulate matter was heavy on this date.

4/9/12 Mrs. Killebrew obtained a copy of a letter from a search of the online WUP site from Michael Balser, SWFWMD, regarding the piezometers at Mosaic's Hurrah Creek, indicating that Mosaic was not in compliance with permit conditions. The letter was addressed to Mr. Jellerson, Assistant Vice President of Mosaic. Mr. Balser requested that Mr. Jellerson, provide a written response describing how Mosaic would increase water levels in the water table to restore the water table and included the following statement: "Be advised that this failure to maintain water levels at preservation area boundaries is a violation of Conditions 4.b. and 6 of Water Use Permit 20011400.024."

4/12/12 Mrs. Killebrew called Danny Stubbs, FDEP Project Engineer for Mosaic mining project: # 1050034-023AC regarding two proposed "transfer sheds," to transfer phosphate rock to hauling vehicles. Mr. Stubbs also are referred to "transfer sheds" as "dust sheds." The legal notice indicates that one of these "dust sheds" would be constructed by Mosaic east of the Killebrews' property. Mr. Stubbs told Mrs. Killebrew that dust particles that are seen by the naked eye are in violation of state law. He told Mrs. Killebrew that Hillsborough County laws for particulate air pollution are more strict. He advised Mrs. Killebrew to notify the Health Department for the State of Florida about the air quality problems. Mrs. Killebrew notified the Health Department for the State of Florida about the long-term air quality violations from Mosaic's mining. The response from that Department to Mrs. Killebrew was an email list of life threatening problems from breathing "dust" (particulate matter). Additionally, Mrs. Killebrew pointed out that Hillsborough County has not taken enforcement action against Mosaic's long-term air quality violations of the County's "stricter" air pollution laws.

4/25/12 Mrs. Killebrew sent a letter to SWFWMD, attention Mr. Brent White, regarding Mosaic's failure to comply with permit conditions maintaining groundwater levels for its water use permit for the Ft. Lonesome mining permit extension - FCO MU19 S (Four Corners Mining Unit 19) adjacent to the Killebrews ranch and home. The letter provided an overview of problems with Mosaic and the lack of concern by all regulatory agencies with the long-term permit violations and the current lack of water in the area near the mining. The letter cited documents obtained from Mrs. Killebrew's searches on the SWFWMD's online WUP site, included documents dated:

4/30/10, from Tara Crews, Environmental Superintendant, West Mines, Mosaic to Balser, SWFWMD detailing low ground water in four major areas that "water not reestablished: Hopewell MU7, Lonesome, West Manatee, West Hillsborough monitoring network.

4/4/12, which stated that SWFWMD received a letter from Mosaic detailing mitigation costs and plan for the complainant Acecapader Trailer park near the Killebrew ranch that confirmed the lack of water for the trailer park next to Killebrews' property (Florida Acecapader).

4/5/12, between Balser to Jellerson regarding water table monitoring Lonesome Enigma Mine that water issues 'not resolved.'

Other documents between Mosaic and SWFWMD discussing mining effects on adjacent properties

Mrs. Killebrew's letter cited her findings of documents (some listed above) regarding SWFWMD's knowledge that water issues were not "drought" but in response to mining as well. Mrs. Killebrew never was told that groundwater levels had been a problem since April 10, 2010, as cited above. Mrs. Killebrew also discovered using that online WUP site that Mosaic had dug wells or pits on other private property in her vicinity, under the presumption that these new wells and pits would resolve the problem that the mining had resulted in the lack of water on those private properties. "Dust" problems also were referenced. In her letter to Mr. Brent White, SWFWMD, Mrs. Killebrew requested a map showing the locations of all of the monitoring piezometers for Mosaic's mine, but ***never received that information***. The SWFWMD documents stated the piezometers indicated there was a 7½ foot drop in the water table from the mining.

5/1/12 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC, telling her about the tremendous dust cloud from the mining and including a photograph of the cloud of particulate pollution. These new photographs included a picture of an alligator covered in phosphate mine dust as it was crawling around attempting to find water. Mrs. Killebrew also reported that her family was having severe sinus problems and throat and ear pain caused by the long funnel cloud of dust heading towards Ruskin. Mrs. Killebrew also advised Ms. Hallgren that Mr. Rivera from FDEP was scheduled to come to the Killebrews' property on May 10, 2012 regarding the continuing violations from Mosaic's mining.

5/2/12 Mrs. Killebrew sent an email to Marvin Blount, EPCHC (Blount@epchc.org) regarding another bunch of photographs by Mrs. Killebrew of dust clouds from mining that violate air pollution laws for particulates. Mr. Blount confirmed her complaint had been received and entered into the record.

5/3/12 Dan Hardy, another resident of Mosaic's mining area, sent letters to the BOCC members with complaints similar to those the Killebrews had reported for years regarding how residents were suffering from the strip mining and air pollution/dust problems. Dan Hardy sent photographs of the intersection of 674 and 39 illustrating the serious difficulty in seeing traffic through the dust clouds from mining and of school buses letting children off in the heavy dust.

Mrs. Killebrew sent another email to Ms. Hallgren EPCHC, making a request under the Sunshine Law, asking for copies of emails/letters and any documents between EPCHC and Mosaic referencing the Killebrews or their property and received details of a pit being used to "dewater."

5/7/12 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC, stating she would request additional public information documents related to Mosaic's mining soon.

5/10/12 Mrs. Killebrew met with Mr. Orlando E. Rivera with FDEP's, PWS, Bureau of

Mining and Minerals Regulation in Tallahassee, at the Killebrews' home. Mr. Rivera said that the mining dust pollution and water violations were not within his scope – so apparently he traveled all the way from Tallahassee for no reason. He suggested notifying SWFWMD, EPCHC and the State of Florida Department of Health about those violations.

5/11/12 Mrs. Killebrew emailed the State of Florida Department of Health, via the agency's web site, with questions regarding the air pollution violations from Mosaic's mining. Mrs. Killebrew also made another complaint call to Mr. Balser, SWFWMD's, Compliance officer regarding the lack of water in the well that Mosaic had drilled on the Killebrews' property when mining from "MU 19" lowered the water levels on the Killebrews' property. The key question to Balser during this complaint was:
"Why are there no fines leveled against Mosaic?"

Mr. Balser's response was that SWFWMD "prefers to allow Mosaic to correct problems and mitigate elsewhere," citing as an example the Green Swamp. Mr. Balser also cited using "sealing water wells" to mitigate wetlands, but Mr. Balser stated there will be an alteration in water quality as wetlands water is unique for that wetland.

5/12/12 Mrs. Killebrew received an email from Ms. Hallgren, EPCHC, in response to Mrs. Killebrew's request for public documents. The email included two letters from Billy Land of Mosaic stating what Mosaic is trying to do about the air quality violations. One response by Land was for a date and time that EPCHC had observed the air quality violations. March 15, 2012, Billy Land further stated that the "lake" – referring to one of the pits dug for the mining project near MU19 – was dug to reduce "dust" from Mosaic's mining. A map of the recently excavated pit called a "lake" also was sent to Mrs. Killebrew.

5/13/12 Mrs. Killebrew sent an email to Ms. Hallgren, EPCHC, acknowledging that watering Mosaic's dirt berm has reduced but not stopped dust problem. Of course watering the mining berm uses even more water and will reduce the water levels even more. Mrs. Killebrew also advised Ms. Hallgren that her husband's admission to South Bay Hospital was due to massive dust (air quality particulates violation), which exacerbates his stage 4 chronic obstructive pulmonary disease (COPD).

Mrs. Killebrew's email included suggested actions that would reduce the air quality violations from Mosaic's mining, including requiring Mosaic to limit the number of mining units (MU) in areas where people live. For example, the area where the Killebrews live have at least 7 open mining areas, each consisting of about 2,000 acres and MU 19, the Four Corners Mining Unit in front of the Killebrews' home is approximately 1200 to 2400 acres in size. Mrs. Killebrew also pointed out that Mosaic repeatedly attempted to blame the air quality violations on the road construction to widen the highway, but Mrs. Killebrew pointed out that she had taken several years of photographs of the severe air quality violations when no widening or other construction of State Road 674 was occurring.

Mrs. Killebrew also referenced a Request for Additional Information (RAI) question posed by Mr. Oros of SWFWMD asking Mosaic to quantify the volume of water for mining cuts and rotation to, and use of, a settling pond. Mosaic stated that it **has no knowledge of the amount of ground water used because they (Mosaic) do not measure that pumpage.**

Mrs. Killebrew confirmed that lack of information during a discussion with Mr. Balser, SWFWMD, when he confirmed that SWFWMD does not have that water use information and that water use information is not reported as part of Mosaic's combined mega water usage. Mrs. Killebrew stated that she did not understand how Mosaic could be considered a "green" company with long-term, continuing water and air quality violations.

5/16/12 Mrs. Killebrew received an email from Mr. Randy Merchant (Randy.Merchant@DOH.state.fl.us), in response to the email she had sent to the Florida Department of Health (FDOH) on 5/11/12 stating that "dust" (particulate matter) is dangerous to our health and detailed information about the harm that dust does to humans. Mrs. Killebrew also sent an email to Mr. Merchant (DOH.state.fl.us) thanking him for his email response about health problems caused by "dust" (particulates). Mrs. Killebrew also explained that she had spoken with Mr. Stubbs, the FDEP mining regulator, regarding two "dust" houses for phosphate unloading in the Ft. Lonesome area and was told about state regulations regarding dust saturation level.

6/18/12 Mrs. Killebrew called Mosaic and spoke to Mr. Land, regarding the severe dust (particulate) violations that her family and livestock were being subjected to because of Mosaic's mining, but Mosaic did nothing.

10/11/12 Mrs. Killebrew received a telephone call from Marvin Blount, EPCHC (Blount@epchc.org), regarding dust in the vicinity of Mosaic's Four Corners mine. He requested that they call him directly when they were having air quality problems from mining dust and stated that the Killebrews were the only ones who filed complaints about air quality violations from Mosaic's mining.

10/16 /12 Mrs. Killebrew had a telephone conversation with Mr. Hardy, who lives in the Killibrews' neighborhood.

Mr. Hardy stated that he had called Marvin Blount of EPCHC to report vast dust clouds and that Mr. Blount had stated that Mosaic claimed that road department was at fault.

Mr. Hardy also stated that he had called the project engineer for DOT, Laura Weakley and Ms. Weakley stated to Mr. Hardy that lane construction (working on 674 widening and repair work) was not being conducted in that area during the previously referenced dust report sent EPCHC. Ms. Weakley further stated that she took photographs and that her phone number was 941-724-0924 if anyone wanted additional confirmation that DOT was not causing the air quality problems.

12/17/12 During a search of SWFWMD's online site, Mrs. Killebrew discovered a copy of a letter dated 12/17/12 that Andrea Hughes, SWFWMD Environmental Scientist, had sent to David B. Jellerson, Assistant Vice President for Mosaic Fertilizer LLC, advising Jellerson that she was:

- 1) granting Mosaic an extension until January 2014 – which was the 2nd extension granted by the SWFWMD – for "remediation" by Mosaic of the lowered water table caused by Mosaic's MU19 mining; and
- 2) granting Mosaic permission to change a "sealing well" to a "mitigation well" to produce water to pump into a "mitigation" pit.

The letter included no information regarding how these repeated time extensions by SWFWMD staff for Mosaic to continue violations of its permit conditions to maintain pre-mining water levels was affecting surrounding property owners and residents like the Killebrew family or the environment.

12/26/12 Mrs. Killebrew sent an email to Andrea Hughes, SWFWMD, referencing Ms. Hughes' letter to Jellerson dated 12/07/12.

Mrs. Killebrew explained that the Killebrews cannot survive the economic hardship caused by SWFWMD's continuing failure to enforce permit requirements that Mosaic maintain water levels and that the lowered water levels are preventing the Killebrews from growing grass to feed their cattle.

Mrs. Killebrew further expressed her shock over the total lack of logic in SWFWMD allowing Mosaic to pump even MORE ground water through "sealing/mitigation" wells to pump that water into a "mitigation" pit where the water would evaporate rapidly.

Mrs. Killebrew received no response to her email from Ms. Hughes.

2013

1/16/13 Mrs. Killebrew sent another email to Andrea Hughes, SWFWMD, repeating the comments stated in Mrs. Killebrew's email dated 12/26/12, allowing Mosaic to wait until January **2014** to correct the problem with lowered water levels.

Mrs. Killebrew cited Mosaic's WUP 20011400.025 as a legal document that states Mosaic must prevent "adverse impacts" to neighbors.

Mrs. Killebrew also requested permission to view SWFWMD's file, where all of the documents related to complaints about Mosaic's mining were located.

Requirements of WUP 20011400.025 require that all complaints related to the mining were to be tabulated in a clearly stipulated manner to include a response to complainant within 20 days.

Mrs. Killebrew received no response from Ms. Hughes regarding Mrs. Killebrew's request.

3/19/13 Mrs. Killebrew researched online records recently posted by SWFWMD and discovered that SWFWMD and Mosaic again conspired to subvert complaints by the Killebrews to benefit Mosaic at the expense of the Killebrews.

Documents and maps dated November 20, 2009, illustrated that groundwater withdrawals from well 20009017.006 had been renewed for another ten years illegally for lessee's Ag-Mart Farms when Ag-Mart was no longer on that property. That agriculture permit then was changed to an adjacent "sealing well" with withdrawals increased by approximately a million gallons per day, using the Killebrew's complaints about dust, water, and over-pumping complaints to justify Mosaic's "need" for an "augmentation" well to withdraw even more water.

See the reference to illegal use of water by Mosaic that occurred on 11/20/09, but was not revealed until now.

* **BOCC = Board of County Commissioners (Hillsborough County)**

* **EPCHC = Environmental Protection Commission of Hillsborough County**

* **FDEP = Florida Department of Environmental Protection**

* **PGMD = Planning & Growth Management Department of Hillsborough County**

* **SWFMWD = Southwest Florida Water Management District**

* **USACOE = U.S. Army Corps of Engineers**

* **USEPA = U.S. Environmental Protection Agency**

ATTACHMENT B

<http://www.palmbeachpost.com/ap/ap/top-news/tampa-area-man-swallowed-by-sinkhole/nWdSP/>

By CHRIS O'MEARA

The Associated Press

SEFFNER, Fla. —

A police spokesman in Florida says they are starting a recovery effort to find a man who was swallowed up by a sinkhole at his home.

Hillsborough County Sheriff's Office spokesman Larry McKinnon said Friday they asked sinkhole and engineering experts to come to the home near Tampa. The experts are using equipment to see if the ground can support the weight of heavy machinery that is needed for the recovery effort.

Jeremy Bush, who was home at the time, says he fears his brother Jeff has died. He ran into his brother's bedroom when he disappeared into the sinkhole Thursday night, but he says he could not save him.

Copyright The Associated Press

<http://www.usatoday.com/story/news/nation/2013/03/04/sinkhole-seffner-florida/1963175/>

Another suspected sinkhole opens up in a Fla. neighborhood

WTSP-TV, Tampa-St. Petersburg, Fla. 5:47p.m. EST March 4, 2013

This apparent sinkhole is about two miles from where one opened up on Thursday, killing a man whose bedroom was above it.

Another sinkhole appears to have opened up in a Seffner, Fla., neighborhood, the second time in less than a week.

Hillsborough County Fire Rescue and code enforcement have responded to Cedar Tree Lane to determine if it is safe for families to stay in their homes.

Sky 10 footage shows the hole is about 10 feet across, and is straddling across a fence, affecting at least two properties.

That location is about two miles from where a sinkhole opened up underneath a house Thursday night, killing Jeff Bush. Crews are in the process of demolishing that home.

STORY: Demolition reveals huge sinkhole <<http://www.usatoday.com/story/news/nation/2013/03/04/sinkhole-home-florida/1961997/>>

MORE: Additional coverage from WTSP <<http://www.wtsp.com/news/topstories/article/302137/250/Another-suspected-sinkhole-opens-up-in-Seffner>>

<http://brandon.patch.com/articles/3rd-seffner-sinkhole-increases-community-concerns>

* By Linda Chion Kenney <<http://brandon.patch.com/users/linda-chion-kenney>>

* Email the author <<http://brandon.patch.com/articles/3rd-seffner-sinkhole-increases-community-concerns#>>

* 5:57 am

3rd Seffner Sinkhole Increases Community Concerns

Hillsborough County Fire Rescue and code enforcement officials were on the scene this weekend in Seffner for the opening of another sinkhole, which has, as expected, led to another round of comments from Brandon Patch readers.

The latest sinkhole to open in Seffner has heightened the concern of residents in Greater Brandon and beyond, as evidenced by their concerns posted in comments to a recent Brandon Patch post.

* See Another Sinkhole Opens in Seffner <<http://brandon.patch.com/articles/another-sinkhole-opens-in-seffner>>

"Someone needs to figure out why these sinkholes are happening and we all need to keep a lookout no matter where you are," wrote Brandon Patch reader Stacie Jones. "And we need to find a way to prevent these sinkholes because they are scary."

Hillsborough County Fire Rescue and code enforcement officials were on the scene this weekend at the sinkhole between 1425 and 1427 Lake Shore Ranch Drive in Seffner.

It was the third reported sinkhole in Seffner since Feb. 28, when Jeffrey Bush 36, died after the bedroom he was sleeping in was consumed by a catastrophic sinkhole at 240 Faithway Drive.

That sinkhole, described as "unprecedented," caused the home to be demolished and the two neighboring homes to be evacuated, leaving many families, including the Wicker and Jaudon families, displaced.

A second sinkhole opened up in Seffner days later, between two homes, at 1204 and 1206 Cedar Tree Lane. That sinkhole is 3.4 miles from the Lake Shore Ranch Drive sinkhole, which reportedly opened March 23, at around 7 p.m.

It was described as "approximately 8 feet in diameter and 10 feet deep."

"Most likely it's due to our use of underground water sources, such as aquifers and springs," answered a reader named Gale, in answer to the reader's concern about what causes sinkholes. "This depletes the water, lowering the water table, and causing the ground above to collapse."

Her conclusion, though, gives more cause for concern: "The whole state of Florida is going to be swallowed by a giant sinkhole."

That doomsday alert notwithstanding, one reader expressed concern that sinkholes are reported in the first place.

"If this happened to me I'd just try to conceal it and keep quiet about it," wrote a reader identified as CJ. "I'm sure even the neighbors would keep it a secret, because often it gets them kicked off their property."

"Surprised?" answered a reader named Sarah. "Would you want to go back in your home if you thought the sinkhole would swallow your house up along with your family and/or animals? I would be very upset if you invited me to your home knowing there was even a remote possibility [of a sinkhole opening up]."

Bruce raised the concern level even higher.

"If they are going to report every sinkhole that opens up in Florida, they might as well start a newspaper dedicated to it," he said. "I've lived in Pinellas County for 42 years and cannot even come close to remembering all that I have seen."

See what else readers are saying, and add your comments to the mix, at Another Sinkhole Opens in Seffner
<<http://brandon.patch.com/articles/another-sinkhole-opens-in-seffner>> .

RELATED SEFFNER SINKHOLE COVERAGE:

- * Community Aids Displaced Seffner Sinkhole Victims <<http://brandon.patch.com/articles/community-aids-displaced-seffner-sinkhole-victims>>
- * Memorial Announced for Sinkhole Victim <<http://brandon.patch.com/articles/memorial-announced-for-sinkhole-victim>>
- * Jaudon Family Displaced in Seffner Sinkhole Tragedy <<http://brandon.patch.com/articles/jaudon-family-displaced-in-seffner-sinkhole-tragedy>>
- * HuffPost Live Looks at Seffner Sinkhole Tragedy: 'Saving Us From Sinkholes'
<<http://brandon.patch.com/articles/huffpost-live-looks-at-seffner-sinkhole-tragedy-saving-us-from-sinkholes>>
- * Heartfelt Words for Jeffrey Bush, New Sinkhole 'Vacate' Sign Posted <<http://brandon.patch.com/articles/heartfelt-words-for-jeffrey-bush-new-vacate-sign-posted>>
- * Seffner Sinkhole Video: 'In a Flash It Happens and the Whole World's Changed'
<<http://brandon.patch.com/articles/seffner-sinkhole-video-in-a-flash-it-happens-and-the-whole-world-s-changed>>
- * Video: Final Walls Come Down on Seffner Sinkhole at 240 Faithway Drive
<<http://brandon.patch.com/articles/video-final-walls-come-down-on-seffner-sinkhole-at-240-faithway-drive>>
- * 2nd Seffner Sinkhole Under Investigation as Stabilization Work Continues
<<http://brandon.patch.com/articles/second-seffner-sinkhole-under-investigation-as-faithway-drive-stabilization-work-continues>>
- * Bush Family Place Memorial Flowers, Mementos in 1st Bucket of Sinkhole Gravel
<<http://brandon.patch.com/articles/jeffrey-bush-family-places-memorial-flowers-mementos-in-first-bucket-of-sinkhole-gravel>>
- * Seffner Sinkhole Homeowner: 'God Has a Plan' <<http://brandon.patch.com/articles/seffner-sinkhole-homeowner-god-has-a-plan-photos-and-video>>
- * Seffner Sinkhole Victim Officially 'Presumed' Deceased <<http://brandon.patch.com/articles/seffner-sinkhole-victim-jeffrey-bush-officially-presumed-deceased>>
- * Readers React to Seffner Sinkhole Tragedy <<http://brandon.patch.com/articles/readers-react-to-seffner-sinkhole-tragedy>> <<http://brandon.patch.com/articles/seffner-sinkhole-victim-jeffrey-bush-officially-presumed-deceased>>
- * Family Treasures Salvaged from Seffner Sinkhole Demolition <<http://brandon.patch.com/articles/family-treasures-items-salvaged-from-seffner-sinkhole-demolition>>
- * Demolition Under Way at Seffner Sinkhole Site <<http://brandon.patch.com/articles/demolition-under-way-at-seffner-sinkhole-site>>
- * More Photos From the Seffner Sinkhole Site <<http://brandon.patch.com/articles/more-photos-from-the-seffner-sinkhole-site>>
- * Memorial Forms at Seffner Sinkhole Site, 'Angels Among Us' Observed
<<http://brandon.patch.com/articles/memorial-forms-at-seffner-sinkhole-site-angels-among-us-observed>>
- * Seffner Sinkhole Operation Readies for Impending Demolition <<http://brandon.patch.com/articles/seffner-sinkhole-operation-readies-for-impending-demolition>>
- * 3rd Home 'Compromised' at Seffner Sinkhole Site; Relief Fund Established <<http://brandon.patch.com/articles/3rd-home-compromised-at-seffner-sinkhole-site-relief-fund-established>>
- * Video: Deputy Douglas Duvall Recounts Seffner Sinkhole Heroics <<http://brandon.patch.com/articles/video-deputy-douglas-duvall-recounts-seffner-sinkhole-heroics>>
- * Situation 'Extremely Unsafe' at Seffner Sinkhole Site <<http://brandon.patch.com/articles/situation-extremely-unsafe-at-seffner-sinkhole-site>>

- * Family Member Recalls Horror of Seffner Sinkhole Tragedy <<http://brandon.patch.com/articles/family-member-recalls-horror-of-seffner-sinkhole-tragedy>>
- * Photos From the Scene of Sinkhole in Seffner <<http://brandon.patch.com/articles/photos-from-the-scene-of-sinkhole-in-seffner>>
- * Video: Hillsborough Fire Chief Discusses Seffner Sinkhole <<http://brandon.patch.com/articles/video-hillsborough-fire-chief-discusses-seffner-sinkhole>>
- * Hillsborough County Among Top 10 Sinkhole-Prone Florida Counties
<<http://brandon.patch.com/articles/hillsborough-county-among-top-10-sinkhole-prone-florida-counties>>
- * Update: Sinkhole Swallows Seffner Man Sleeping in Bed <<http://brandon.patch.com/articles/sinkhole-swallows-man-sleeping-in-bed-near-brandon>>
- * Video of Deputy Who Worked To Save Men From Sinkhole <<http://brandon.patch.com/articles/video-of-deputy-who-worked-to-save-men-from-sinkhole>>
- * Video: Man Could Hear His Brother Screaming
<http://www.baynews9.com/content/news/baynews9/video.html?clip=http://static.baynews9.com/newsvideo/bn9/web_video/Jeremy_Bush_31.f4v&vtitle=Man%20could%20hear%20brother%27s%20screams%20in%20sinkhole>
- * Video: Fire Chief Answers Questions <<http://brandon.patch.com/articles/video-hillsborough-fire-chief-discusses-seffner-sinkhole>>

Related Topics: Seffner Sinkhole <<http://brandon.patch.com/topics/Seffner+Sinkhole>> and Sinkholes
<<http://brandon.patch.com/topics/Sinkholes>>

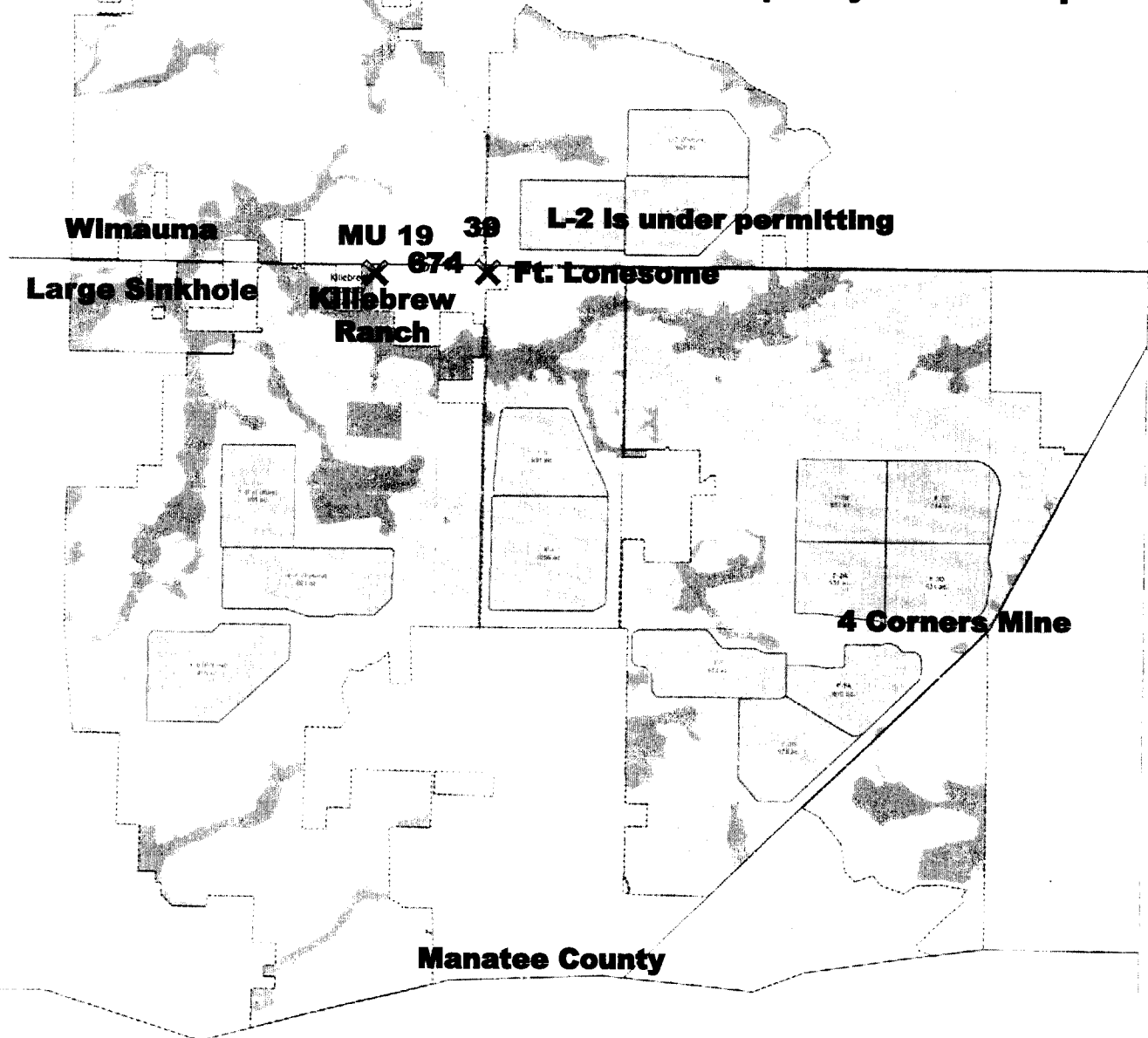
mine pit for Tampa Bay water
8.4 miles north of these mine slime pits

2 Sinkholes

Balm, FL at Dump X 672

Sinkholes reported within 5 miles
of L1, L2 and L3 mine slurry pits

Mining here on Hurrah Creek affects
Alafia River and Tampa Bay Water mine pit



Legend



Mosaic

Four Corners / Lonesome Mine
Conceptual Plan

FCL-GPH

Waste Disposal
Areas

Map #3

ATTACHMENT A

Killebrew Summary of Complaints, Permit Violations and Other Communications with the USACOE, SWFWMD, FDEP, EPCHC and Hillsborough County BOCC Related to Adverse Impacts of Mosaic's Mining Operations*

1997

3/31/97 In the Southwest Florida Water Management District (SWFMWD) repository, Mrs. Killebrew located a complaint worksheet filed with SWFWMD from Gary Serviss of Mulberry, Florida regarding his spring-fed cattle pond that stopped flowing following mining on Bethlehem Road in December of 1996. At Hillsborough County Board of County Commission (BOCC) hearings during this time period, Mosaic repeatedly stated its operations did not harm water sources.

4/17/97 In the SWFWMD repository, Mrs. Killebrew located a packet of paperwork involving a certified letter received by Mr. Balser of SWFWMD from attorney C. Feer, Esq., representing Maddox Groves, Inc. The letter stated the dewatering near the Haynesworth Mine has caused lowering of ground water 20 feet in an adjacent pit used in mine cuts and the subsequent "curling of leaves" in Maddox Groves trees. Attorney Feer threatened legal action. Mosaic continued to state, under oath at BOCC hearings, that there were no water problems.

2004

8/27/04 FDEP Kevin Claridge, Environmental Manager, FDEP, wrote a warning letter to Mosaic/IMC of possible violations involving two instances of unauthorized discharges into the Little Manatee River and Alderman Creek. The DEP fine was a paltry \$1500.00. That letter was the result of Mrs. Killebrew's search of SWFWMD public records.

2006

no date Dust complaint presentation to BOCC by Mrs. Killebrew describing proximity of the Mosaic/Ag-Mart Farms to the Killebrew ranch. Killebrew described dust storms and extreme water runoffs from Mosaic/Ag-Mart lands and soil erosion that led to the silting of the Little Manatee River. The SWFWMD and BOCC ignored our complaints of those violations of SWFWMD rules and permit conditions by Mosaic/Ag-Mart Farms on nearby land. Specifically, 6.2 Special Permit Conditions, 4. Investigating Complaints Condition of the "South West Florida Water Management District Water Use Permit Information Manual, Part B Basis of Review" (BOR), includes the following requirement: "The permittee shall file a report of the complaint, the findings of facts, and any mitigating action taken or to be taken by the permittee, to the Director, Resource Regulation Department, for review and approval within 15 days of the receipt of any complaint." No record of any of those reports were found in the SWFWMD files. Additionally, pages 18 and 19 of WUP No. 20011400.025, dated March 27, 2012, also includes the following statements:

2. ...the Permittee shall supply the complainant with any water necessary for health and safety purposes, such as drinking water, within 72 hours of complaint receipt.

A. Impacts to wells: The complainant's problem shall be fully corrected within 15 days of complaint receipt.

4/3/06 Mrs. Killebrew called EPCHC to register formal complaint of dirt in the air and possible harm to family. EPCHC stated they would bring it to Mosaic's attention, but the problem was not resolved.

4/9/06 Mrs. Killebrew called Michael Bonomo, the Adjustor for Ag-Mart/Mosaic (941-737-5555), to register a formal complaint about the severe dust problems and requested an inspection to evaluate the severity of the sand and dust and water problems.

6/28/06 Mrs. Killebrew again called the Insurance Adjustor's office for Ag-Mart/Mosaic, but repeatedly was told that the person handling that complaint/claim was "out of town."

8/19/06 Letter by Killebrews to EPCHC Air Management Division citing Ag-Mart/Mosaic's particulate air quality violations from sand and dust and violations from over-pumping of ground water. Mrs. Killebrew sent copies of the complaint and photographs of the particulate air quality violations to both Ag-Mart Farms and Mosaic. The photographs included a picture of airborne sand more than four-feet deep covering a barbed wire fence adjacent to the Killebrew property. Ag-Mart filed response to SWFWMD citing water pumpage was for "dust control" to keep sand and dust (aka particulate matter) down and that they planted a cover crop. No evidence of either was noted by the Killebrews. Mrs. Killebrew found Ag-Mart/Mosaic's response in SWFWMD's document repository. Ag-Mart's response was filed with SWFWMD and did not reference the Killebrew complaint. The Killebrews never received any response to the above problem from any agency or from Ag-Mart/Mosaic/IMC.

2007

1/30/07 Mrs. Killebrew called EPCHC and left a voice mail message regarding another air quality violation on Ag-Mart/Mosaic land from the burning of plastic, resulting in ashes from the burnt plastics on the Killebrews' car, home and property. Photographs of this violation were mailed to EPCHC. The Killebrews received no response from Ag-Mart/Mosaic or EPCHC.

2008

1/21/08 Mosaic consultants conducted well testing for water quality and water levels on Killebrew property. Mosaic tested the well in Killebrews' yard and the well located in the Killebrews' field. Gary Uebelhouer with Mosaic's contractor, Environmental Consulting & Technology, Inc. (ECT) provided a paper record of the results for both wells for the following: odor, No3, metals, coliforms, TOC, color. TSS, sulfate, Mod, Gross alpha radiation conditions. That record indicated all parameters were in the normal range with the following exception:

Gross Alpha Radiation was 18-22 and Radium 226+228 was 7.9-12.7 and that E. coli bacteria was found in both wells that were tested. The Killebrews then had their well water tested for bacteria using Advanced Environmental Laboratories, Inc. in Tampa. That lab found no coliform bacteria. Mr. & Mrs. Killebrew and Mr. Hardy were the only two families notified of bacterial contamination of the wells tested during the permitting of DRI 263. Coincidentally, those were the two families who led the protest against Mosaic's mining. None of the wells for those families have tested positive for bacterial contamination since the tests by Mosaic's contractor, ECT. Mosaic's water quantity tests on the well used for the Killebrews' home

consisted of measuring how fast a five gallon bucket would fill. No information on water levels was provided to the Killebrews.

2/26/08 Mrs. Killebrew filed for a hearing with the State of Florida, Division of Administrative Hearings (DOAH) regarding SWFWMD water use permit 20009017.006 for Mosaic/Ag-Mart farms adjacent to Killebrews' home and farm because Mosaic tried to renew that groundwater withdrawal permit illegally. According to SWFWMD permitting rules, when a lessee leaves leased property, any existing water permit either is terminated or re-issued promptly in the name of the lessor. Mosaic sent a letter to SWFWMD designating Ag-Mart as a Mosaic representative with written permission to renew the water use permit in the name of Ag-Mart Farms for ten (10) additional years when Ag-Mart was no longer on Mosaic land. When the lease on leased land is terminated there is a name change on the permit to reflect that. The well should have been renewed under Mosaic as Mosaic stated publicly at a BOCC meeting that Ag-Mart was no longer on the property across from the Killebrews. The hearing was filed as Killebrew vs. Mosaic/ Ag-Mart, but Ag-Mart had a name change to "Santa Sweets" due to pesticide violation citations.

The DOAH hearing was scheduled for April 14, 2008, but was dropped because Mosaic's attorneys, Holland and Knight, sent a letter stating that Mosaic no longer needed to pump water from that well. Mrs. Killebrew discovered the referenced duplicity by reviewing documents in the SWFWMD records files.

The Killebrews had experienced problems related to that well, because ground water was being pumped from that well around the clock for weeks, with the water being discharged from Mosaic/Ag-Mart property as surface water being channeled under St. Rd. 674 and down a ditch into the Little Manatee River. Those discharges resulted in severe siltation in the river. Mrs. Killebrew discovered additional documents in the well permit file allowing Mosaic/Ag-Mart to increase the amount of ground water they pumped to use that additional water to try to control Mosaic's air pollution problems from dust/particulate related to those complaints submitted by the Killebrews. Ag-Mart acting as Mosaic's agents stated in those documents, discovered in the SWFWMD files by Mrs. Killebrew, that the additional water they needed to pump was needed so they could plant a cover crop to prevent the dust/particulate violations referenced in the complaints by the Killebrews. So the air pollution complaints by the Killebrews were used to by the SWFWMD to authorize withdrawing even more water, despite the repeated complaints by the Killebrews about the dewatering and the Killebrews were not even notified of those authorizations by the SWFWMD. See the related entry dated November 20, 2009 regarding well 20009017.006.

5/21/08 Mrs. Killebrew sent an email complaint to Mr. Kerr of SWFWMD regarding lack of SWFWMD oversight and lax regulation resulting in the demise of the Little Manatee River and trees dying in wetlands. Complaint also described adverse impacts on wetland and springs on the Killebrews' property. Mrs. Killebrew sent a photograph to the SWFWMD and the Governor of the vast desert across the road at Mosaic/Ag-Mart, showing the pile of sand covering the top of the barbed wire fence on the Killebrew property deposited as "particulate matter" and illustrating that "best management practices" are not working. The picture was of sand topping a barbed wire fence...sent to the governor as well. The email response from Kerr was that there were no permit violations and that Mosaic's request for renewal of pumping permit 20009017.006 was withdrawn.

5/22/08 SWFWMD's Rick McCleery (Rick.McCleery@swfwmd.state.fl.us) emailed an answer to Killebrew's question about **exactly** what SWFWMD will do about the Little Manatee River going dry. He sent an email to Mrs. Killebrew telling her to contact Ms. Vazquez at FDEP as mining falls "within the jurisdiction of the FDEP, not water management districts." Mr. McCleery received photographs of the Killebrews' dead trees in their wetlands and the dry Little Manatee River...as did the governor.

5/23-6/1/08 FDEP Mrs. Killebrew sent emails to Ms. Pamela Vasquez (Pamela.Vasquez@dep.state.fl.us), as instructed by Mr. McCleery of SWFWMD on 5/22/08, asking the same question - what will the agencies do about the mining causing the Little Manatee River to go dry and killing their trees. No response was received about how these problems would be solved.

5/23/08 Ms. Hart, with EPCHC, emailed an answer to the Killebrews' question regarding establishing successful wetlands. She sent a cc of her email to B. Stetler, P. Owens and J.M. Stevenson of Hillsborough County, including a detailed description of the local process. Ms Hart's email stated that "one cannot achieve a complete restoration of a mature wetland system that has been impacted."

5/30/08 Killebrews received a packet from EPCHC summarizing inspection of the Little Manatee River by EPCHC staff, Pete Owens, Dawn Hart, Colin Strickland (intern, Legal) and Milutin Jeftie (intern ISYS), and PGMD staff, M. Stevenson, Land Excavation/Phosphate Mining, confirming little flow of the Little Manatee River and tree kill. The summary included photographs furnished by Ms. Hart.

5/31/08 email from Pamela Vazquez, FDEP to Mrs. Killebrew, with a copy to John Coates, FDEP, to address the Killebrews' concerns regarding the demise of the Little Manatee River and other water concerns related to the mining. Later, Mrs. Killebrew received a phone call from Ms. Vazquez, stating that Mr. McCleery would be arriving in the Four Corners mining area near the Killebrews' property to check the status of the Little Manatee River. The Killebrews received no response or follow up from McCleery.

6/6/08 EPCHC requested by telephone that the Killebrews allow Ms. Hart and Mr. Owens to visit the Killebrews' property at 10:00 a.m. and to meet with the Killebrews. During the meeting, Ms. Hart stated that there were some problems with lack of flow in the river.

6/18/08 SWFWMD record request was submitted by Mrs. Killebrew re: SWFWMD's Request for Additional Information (RAI) questions to Mosaic (2B Flow Alterations) with SWFWMD asking Mosaic about the effects of rainfall/runoff capture and recirculation on flows in all onsite rivers and associated tributaries, Mosaic's response. The record included no "Independent" scientific evaluation of the problems resulting in the reduced river flows and tree deaths.

9/15/08 Mrs. Killebrew sent an email to Dawn Hart with EPCHC about the Board of County Commissioners (BOCC) meeting that day regarding disruptions of underground streams and

Deedra Allen's (Mosaic) interpretations of "new" mining and "vested rights." Mrs. Killebrew asked why the Killebrews' "vested rights" were not being considered since the Killebrews owned their property and farm prior to mining by IMC and Mosaic. Mrs. Killebrew also spoke at the BOCC meeting that day asking why they were not considering the "vested rights" of the Killebrews.

9/19/08 Mrs. Killebrew received an email from Dawn Hart, EPCHC, stating that Dawn Hart had located a publication regarding SWFWMD's springs and streams water monitoring program published May 2001. That publication, by the SWFWMD's Water Quality Monitoring, was entitled "The Hydrology and Water Quality of Select Springs in the Southwest Florida Water Management District." Mrs. Killebrew was investigating what affected springs on and around the Killebrews' property. Trees died where the slurry water is discharged at locations into streams. Those discharges are authorized under the NPDES permit.

12/18/08 Mrs. Killebrew sent an email to FDEP's contact person for legal notices, Linda Henderson (Linda.Henderson@dep.state.fl.us), stating that the response time for legal notices require prompt access to records. Mrs. Killebrew requested to see the written response from EPA and papers filed by Mosaic. A copy of the email was sent to Mosaic, Lisa Lannon and Richard Hicks (Richard.W.Hicks@dep.state.fl.us). Mrs. Killebrew was referred to Orlando Rivera at FDEP.

12/19/08 Mrs. Killebrew sent an email to Mr. Rivera, FDEP, questioning the point of approval by FDEP when approval already was given prior to the BOCC hearings. Mrs. Killebrew also made a complaint with FDEP about legal notices that lack a specific person to contact and was put on Rivera's email list of people receiving email notices for mining applications in Florida. Mrs. Killebrew also was advised to contact Sam Nunn, with the USEPA at the Atlanta Federal Center as well. Mr. Rivera assured the Killebrews that all regulations are enforced to ensure that "reasonable assurances" have been provided by applicants before the agencies take official agency action on mining permits.

2009

1/20/09 Mrs. Killebrew sent emails to Dawn Hart Pete Owens, with EPCHC and Robert Kane, with USGS (rkane@usgs.gov) regarding further questions about the demise of the Little Manatee River. The question was why the response to every complaint about the river by the Killebrews was that the problem was the result of "drought" conditions? Has there been a "drought" in their area every year since 1997? Mosaic responded to SWFWMD's RAI questions for the WUP # 00114.24 application for groundwater pumping that 2002 and 2003 were the worse drought years for a decade.

3/9/09 Mrs. Killebrew sent an email to Dawn Hart, EPCHC, regarding the agencies allowing the mining of wetlands **east** of the Killebrews' ranch property at the Little Manatee River and substituting mitigation wetlands **west** of the Killebrews' property and the adverse impacts to the Killebrews' property and to the river. The email requested the justification for eliminating water from wetlands on and near the Killebrews' property and causing reductions of water in the Little Manatee River.

3/12/09 Dawn Hart, EPCHC, sent an email to the Killebrews indicating that the application for mitigation from up river to down river, past the Killebrews' ranch had not been submitted to Hillsborough County, but provided no answers to the Killebrews' questions.

3/18/09 Mrs. Killebrew made another Public records request to SWFWMD at PublicRecords@watermatters.org and received public request #907167, directions for record requests and a Bartow office number.

4/25/09 The Killebrews observed that the Little Manatee River was completely dry.

5/19/09 Mrs. Killebrew called EPCHC with another complaint about water level problems related to mining.

11/20/09 On 3/19/13 Mrs. Killebrew discovered a document filed under 2009 on the WUP online site document repository that Mosaic, through attorneys Holland and Knight, filed to "retire" the "agriculture" well designated as 20009017.006 which pumped "521,000 gpd" will "offset" the withdrawals from the replacement sealing water well, which will draw a mere 600,000 gpd more. Mr. and Mrs. Killebrew registered another complaint about Mosaic's lessee running pumps seven days a week and 24 hours a day for weeks on end. EPCHC also was called in reference to the water exiting this adjacent property and ERP site (STR: 11 32 21) and eroding the ditch and silting the Little Manatee River, as well as silting wetlands on the Killebrew property. Tomatoes were growing in wetlands on the Killebrews' property because of the water running off of that property. The response from EPCHC's representative was that the Killebrews should be grateful that the wetlands were getting the water and SWFWMD made no attempt to stop the illegal use of well permit 20009017.006 by Mosaic. In fact, Mosaic's attorneys used the Killebrews' complaint to accomplish their original Intent, which was to divert water already being used by existing private property owners, wetlands and streams in that area for the sole use of Mosaic's mining operation. The Killebrews were never informed by SWFWMD, Mosaic or in any way about this illegal use of water by Mosaic.

2010

4/30/10 In 2013, Mrs. Killebrew discovered at the WUP online site a copy of letter dated 4/30/10 from Mark Hurst, in SWFWMD's Mulberry office, to Tara Crews of Mosaic stating that the piezometers indicate pre-mining water levels are not being maintained in Hopewell or Fort Lonesome mining areas and stated that notice was also given of those water-level violations in 2009. Lonesome piezometer Numbers include 2025 through 2030, 2039, and 2044.

7/14/10 Mrs. Killebrew sent an email to Orlando Rivera, Professional Wetland Scientist (PWS), Program Administrator Mandatory Phosphate Section, Bureau of Mining and Minerals Regulation, FDEP, asking for an online repository for variances/modifications for existing phosphate mining permits. Mrs. Killebrew asked also about the numbering and meanings of variances.

7/20/10 Mrs. Killebrew received an email response from Mr. Rivera, FDEP, that referred Ms. Killebrew to Lisa Henderson for a repository of CD's of permits. Mr. Rivera's email also explained numbering system of permits.

Mrs. Killebrew sent another email to Orlando Rivera, FDEP, with a question concerning the meaning of “bridging area permit” because there was no information describing what a “bridging area” is.

Mrs. Killebrew also received an email from Mr. Rivera, FDEP, explaining that the “bridging area” refers to Mosaic’s land covered under wetland resource permit #128272001 issued in 1997 and modified in December 2008. Two more modifications were issued in July 2010. Mr. Rivera stated this (bridging area) is purely for reference and that it is not a “change” to the permit, *but he did not explain what the “bridging area” actually is.*

7/25/10 Mrs. Killebrew sent an email to Mr. Stevenson, PG, Development Review Division, Development Services Department, Hillsborough County BOCC (StevensonJM@hillsboroughcounty.org) with questions she had regarding Mosaic’s massive slurry “ponds” located within five miles of their ranch and safety measures to be followed during a hurricane.

7/27/10 Mrs. Killebrew received an email from Mr. Stevenson at EPCHC (StevensonJM@hillsboroughcounty.org) in response to Mrs. Killebrew’s email about slurry ponds and safety. Mr. Stevenson’s response was similar to the patronizing response from Mr. Zumani of FDEP indicating that we should not be concerned with these matters because the government will “protect” us.

7/29/10 Mrs. Killebrew sent an email to FDEP, Sam Zemani (Sam.Zemani@dep.state.fl.us) in response to his earlier email that month to Mrs. Killebrew, where Mr. Zemani stated that Mrs. Killebrew should believe that the government would take care of her family and neighbors. Mr. Zemani’s email also provided more details about slurry pits and requirements. Mr. Zumani directed Mrs. Killebrew to the repository site for the FDEP located in Hillsborough County on Telecom Parkway, Temple Terrace, Florida. He stated that the design data for each pit is available for review and that “contingency plans” were updated annually as required by Rule 62-672,550, F.A.C. Mr. Zumani stated FDEP’s responsibility was to ensure that the slurry pits are operated safely.

9/13/10 Mrs. Killebrew sent an email to FDEP’s Sam Zemani (Sam.Zemani@dep.state.fl.us) in which she detailed a meeting with Mosaic representatives regarding lack of emergency planning considering that the Killebrew farm is surrounded by about 7 slurry “ponds” each consisting of about 1500 acres and with berms about 40 feet high when each is fully established. The county emergency plans had mistakes, which were detailed in Mrs. Killebrew’s email, and lacked details for residents of the Four Corners mining area. Mrs. Killebrew’s email pointed out two huge sinkholes within five miles of Mosaic’s slurry “ponds.” Mosaic representatives that met with the Killebrews included Curt Wade PE, Larry Odem, Geotechnical Superintendent, and Robert Van Olinda, Senior Ecologist.

Mrs. Killebrew was told by Mosaic representatives that Mosaic employees would alert the Killebrews by coming to their ranch and warning them if the nearest slurry pit (about 1500 acres when complete) suffered a breach. The Killebrews’ property is located within a four-mile range of six pits, each approximately 1100 to 1700 acres in size. The Killebrews pointed out that the closest pit was less than two miles and uphill from their ranch. Mosaic representatives said that

the Killebrews would have hours to evacuate.

2011

3/1/11 Mrs. Killebrew conducted a document search of SWFWMD's online WUP site and discovered a letter dated 3/1/11 from Michael Balser, SWFWMD's Water Use Regulation office, to Mr. Jellerson, Assistant Vice President for Mosaic. The subject of the letter was water use permit compliance and an amended request for an alternative groundwater source, apparently discussing use of different aquifers for alternative water source as well as using wells for wetland preservation. The letter dictates timelines and well recovery levels and states that the groundwater levels are below levels mandated by SWFWMD. Water levels in the piezometers indicate the water table has been lowered from adjacent mining. The Killebrews and other residents near the mines were not notified about these compliance violations or the requested changes in Mosaic's permit conditions.

4/23/11 Mrs. Killebrew sent an email to EPCHC with additional photographs of the continuing airborne sand and dust problems at Four Corners.

5/11/11 Mrs. Killebrew called EPCHC and filed another complaint regarding dragline noise, reporting that her grandchildren were unable to sleep at night.

5/25/11 Ms. Hallgren, EPCHC scheduled an appointment with the Killebrews at 10:00 a.m. to visit the Killebrews' property. Ms. Hallgren heard dragline noise and saw how close the dragline was to the Killebrews' property.

6/17/11 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC (Hallgrenj@epchc.org), regarding the continuing airborne sand and dust and dragline noise from Mosaic's mines. The email described considerable noise and referenced the photographs sent to Ms. Hallgren. Deedra Allen, handling permitting for Mosaic, stated to the BOCC that Mosaic's berms had been planted with vegetation and Mosaic representatives testified that the farmers produce the airborne sand and dust. Residents testified that they did not see these green berms in the Ft. Lonsome mining area. Mrs. Killebrew referred to thousands of acres of Mosaic's mining compared to a few hundred acres at most that were being farmed. Ms. Killebrew included photographs of Mosaic's mining berms that have no stabilizing vegetation on them.

6/21/11 Mrs. Killebrew received an mail from Ms. Hallgren, EPCHC, stating that Killebrews' complaint about dragline noise was entered into the database. She related that she had spoken to Mosaic about the Killebrew complaint in May. Mosaic responded by sending a study done by consultants, ECT in June 2010 and EPCHC was meeting with Mosaic on June 29th. The Killebrews received no further information regarding that study. Killebrews were asked if Mosaic and EPCHC would be allowed on Killebrew property.

6/22/11 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC allowing Mosaic access to the Killebrews' property in response to continuing violations of airborne sand and dust and dragline noise.

7/4/11 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC (HallgrenJ@epchc.org)

citing fresh black dirt deposited on Thursday, June 30, 2011, as a response to the above comment that residents do not see green berms in the Ft. Lonesome mining area. Mrs. Killebrew also included a photograph showing sand moving en masse onto the Killebrews' property from Mosaic's mine, holding the Killebrews hostage in their own home.

7/10/11 Ms. Joan Hallgren, EPCHC Noise Division, called Mrs. Killebrew and stated that Mosaic was to be notified prior to situating noise monitors. As a result of that notification, Mosaic shut down the dragline just as the monitors were being placed on the monitoring date and subsequently the dragline was moved further east before additional dates could be requested for noise monitoring. Mrs. Killebrew was told that for the first three monitoring periods, Mosaic had to be told the date and time prior to noise monitoring.

7/12/11 Ms. Hallgren, EPCHC, sent an email to Mrs. Killebrew stating EPCHC will monitor dragline noise next Saturday night, but Ms. Hallgren also notified Mosaic that the dragline would be monitored next Saturday night. Again Ms. Hallgren stated that Mosaic must be notified for the first three times that EPCHC monitors, then monitoring can be done without notification.

7/16/11 Ms. Hallgren, EPCHC, set up monitoring equipment on the Killebrews' property and the adjacent dragline shut down within 30 minutes of Ms. Hallgren's arrival. Mosaic's crane was moved to another location before the noise data could be gathered. Ms. Hallgren related this lack of monitoring data to Ms. Killebrew by telephone.

8/10/11 Mrs. Killebrew called Ms. Joan Hallgren, EPCHC Noise Division, regarding the deafening noise of Mosaic's dragline that was close to the Killebrew property. Ms. Hallgren stated she was at the Killebrew property two weeks earlier to hear the noise. The dragline moved again, back to the vicinity of the Killebrews' property after this complaint.

12/21/11 Mrs. Killebrew sent another email to Mr. Orlando Rivera, FDEP Program Administrator Mandatory Phosphate Section, Bureau of Mining and Minerals Regulation, Killebrew again requesting the information on the "Bridging Permit Areas."

12/23/11 Mrs. Killebrew received an email from Orlando Rivera, FDEP, finally explaining "bridging" which is a confusing mishmash of several wetland permits issued in 2001 and modified in 2010 with parts of the mine permitted in 2008. He said some areas have been mined and corridors have not and some reclaimed. This seems to mean that some areas are mined, some are "saved" for wildlife, and then mined later. Mrs. Killebrew sent the same bridging question to numerous state regulators attempting to understand what "Bridging Permit Areas" means, but received no real understandable explanation, although this question had been asked repeatedly since 2010.

2012

3/6/12 Mrs. Killebrew emailed to EPCHC two photographs she had taken of recent severe conditions of airborne sand and dust from Mosaic's mining.

4/8-9/12 Mrs. Killebrew notified EPCHC again that her family was being subjected to dust/particulates. Mr. Dan Hardy, one of the Killebrews' neighbors, also reported severe airborne

dust and sand from Mosaic's mining operation located just east of Ft. Lonesome. Mr. Kirkland of Hardee County, an acquaintance of Mrs. Killebrew, called Mrs. Killebrew and told her that his renter was an employee of Mosaic who worked on the slurry pit located about two miles from the Killebrew land and that employee was complaining that the dust/particulate matter was heavy on this date.

4/9/12 Mrs. Killebrew obtained a copy of a letter from a search of the online WUP site from Michael Balser, SWFWMD, regarding the piezometers at Mosaic's Hurrah Creek, indicating that Mosaic was not in compliance with permit conditions. The letter was addressed to Mr. Jellerson, Assistant Vice President of Mosaic. Mr. Balser requested that Mr. Jellerson, provide a written response describing how Mosaic would increase water levels in the water table to restore the water table and included the following statement: "Be advised that this failure to maintain water levels at preservation area boundaries is a violation of Conditions 4.b. and 6 of Water Use Permit 20011400.024."

4/12/12 Mrs. Killebrew called Danny Stubbs, FDEP Project Engineer for Mosaic mining project: # 1050034-023AC regarding two proposed "transfer sheds," to transfer phosphate rock to hauling vehicles. Mr. Stubbs also are referred to "transfer sheds" as "dust sheds." The legal notice indicates that one of these "dust sheds" would be constructed by Mosaic east of the Killebrews' property. Mr. Stubbs told Mrs. Killebrew that dust particles that are seen by the naked eye are in violation of state law. He told Mrs. Killebrew that Hillsborough County laws for particulate air pollution are more strict. He advised Mrs. Killebrew to notify the Health Department for the State of Florida about the air quality problems. Mrs. Killebrew notified the Health Department for the State of Florida about the long-term air quality violations from Mosaic's mining. The response from that Department to Mrs. Killebrew was an email list of life threatening problems from breathing "dust" (particulate matter). Additionally, Mrs. Killebrew pointed out that Hillsborough County has not taken enforcement action against Mosaic's long-term air quality violations of the County's "stricter" air pollution laws.

4/25/12 Mrs. Killebrew sent a letter to SWFWMD, attention Mr. Brent White, regarding Mosaic's failure to comply with permit conditions maintaining groundwater levels for its water use permit for the Ft. Lonesome mining permit extension - FCO MU19 S (Four Corners Mining Unit 19) adjacent to the Killebrews ranch and home. The letter provided an overview of problems with Mosaic and the lack of concern by all regulatory agencies with the long-term permit violations and the current lack of water in the area near the mining. The letter cited documents obtained from Mrs. Killebrew's searches on the SWFWMD's online WUP site, included documents dated:

4/30/10, from Tara Crews, Environmental Superintendant, West Mines, Mosaic to Balser, SWFWMD detailing low ground water in four major areas that "water not reestablished: Hopewell MU7, Lonesome, West Manatee, West Hillsborough monitoring network.

4/4/12, which stated that SWFWMD received a letter from Mosaic detailing mitigation costs and plan for the complainant Acecapader Trailer park near the Killebrew ranch that confirmed the lack of water for the trailer park next to Killebrews' property (Florida Acecapader).

4/5/12, between Balser to Jellerson regarding water table monitoring Lonesome Enigma Mine that water issues 'not resolved.'

Other documents between Mosaic and SWFWMD discussing mining effects on adjacent properties

Mrs. Killebrew's letter cited her findings of documents (some listed above) regarding SWFWMD's knowledge that water issues were not "drought" but in response to mining as well. Mrs. Killebrew never was told that groundwater levels had been a problem since April 10, 2010, as cited above. Mrs. Killebrew also discovered using that online WUP site that Mosaic had dug wells or pits on other private property in her vicinity, under the presumption that these new wells and pits would resolve the problem that the mining had resulted in the lack of water on those private properties. "Dust" problems also were referenced. In her letter to Mr. Brent White, SWFWMD, Mrs. Killebrew requested a map showing the locations of all of the monitoring piezometers for Mosaic's mine, but *never received that information*. The SWFWMD documents stated the piezometers indicated there was a 7½ foot drop in the water table from the mining.

5/1/12 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC, telling her about the tremendous dust cloud from the mining and including a photograph of the cloud of particulate pollution. These new photographs included a picture of an alligator covered in phosphate mine dust as it was crawling around attempting to find water. Mrs. Killebrew also reported that her family was having severe sinus problems and throat and ear pain caused by the long funnel cloud of dust heading towards Ruskin. Mrs. Killebrew also advised Ms. Hallgren that Mr. Rivera from FDEP was scheduled to come to the Killebrews' property on May 10, 2012 regarding the continuing violations from Mosaic's mining.

5/2/12 Mrs. Killebrew sent an email to Marvin Blount, EPCHC (Blount@epchc.org) regarding another bunch of photographs by Mrs. Killebrew of dust clouds from mining that violate air pollution laws for particulates. Mr. Blount confirmed her complaint had been received and entered into the record.

5/3/12 Dan Hardy, another resident of Mosaic's mining area, sent letters to the BOCC members with complaints similar to those the Killebrews had reported for years regarding how residents were suffering from the strip mining and air pollution/dust problems. Dan Hardy sent photographs of the intersection of 674 and 39 illustrating the serious difficulty in seeing traffic through the dust clouds from mining and of school buses letting children off in the heavy dust.

Mrs. Killebrew sent another email to Ms. Hallgren EPCHC, making a request under the Sunshine Law, asking for copies of emails/letters and any documents between EPCHC and Mosaic referencing the Killebrews or their property and received details of a pit being used to "dewater."

5/7/12 Mrs. Killebrew sent another email to Ms. Hallgren, EPCHC, stating she would request additional public information documents related to Mosaic's mining soon.

5/10/12 Mrs. Killebrew met with Mr. Orlando E. Rivera with FDEP's, PWS, Bureau of

Mining and Minerals Regulation in Tallahassee, at the Killebrews' home. Mr. Rivera said that the mining dust pollution and water violations were not within his scope – so apparently he traveled all the way from Tallahassee for no reason. He suggested notifying SWFWMD, EPCHC and the State of Florida Department of Health about those violations.

5/11/12 Mrs. Killebrew emailed the State of Florida Department of Health, via the agency's web site, with questions regarding the air pollution violations from Mosaic's mining. Mrs. Killebrew also made another complaint call to Mr. Balser, SWFWMD's, Compliance officer regarding the lack of water in the well that Mosaic had drilled on the Killebrews' property when mining from "MU 19" lowered the water levels on the Killebrews' property. The key question to Balser during this complaint was:

"Why are there no fines leveled against Mosaic?"

Mr. Balser's response was that SWFWMD "prefers to allow Mosaic to correct problems and mitigate elsewhere," citing as an example the Green Swamp. Mr. Balser also cited using "sealing water wells" to mitigate wetlands, but Mr. Balser stated there will be an alteration in water quality as wetlands water is unique for that wetland.

5/12/12 Mrs. Killebrew received an email from Ms. Hallgren, EPCHC, in response to Mrs. Killebrew's request for public documents. The email included two letters from Billy Land of Mosaic stating what Mosaic is trying to do about the air quality violations. One response by Land was for a date and time that EPCHC had observed the air quality violations. March 15, 2012, Billy Land further stated that the "lake" – referring to one of the pits dug for the mining project near MU19 – was dug to reduce "dust" from Mosaic's mining. A map of the recently excavated pit called a "lake" also was sent to Mrs. Killebrew.

5/13/12 Mrs. Killebrew sent an email to Ms. Hallgren, EPCHC, acknowledging that watering Mosaic's dirt berm has reduced but not stopped dust problem. Of course watering the mining berm uses even more water and will reduce the water levels even more. Mrs. Killebrew also advised Ms. Hallgren that her husband's admission to South Bay Hospital was due to massive dust (air quality particulates violation), which exacerbates his stage 4 chronic obstructive pulmonary disease (COPD).

Mrs. Killebrew's email included suggested actions that would reduce the air quality violations from Mosaic's mining, including requiring Mosaic to limit the number of mining units (MU) in areas where people live. For example, the area where the Killebrews live have at least 7 open mining areas, each consisting of about 2,000 acres and MU 19, the Four Corners Mining Unit in front of the Killebrews' home is approximately 1200 to 2400 acres in size. Mrs. Killebrew also pointed out that Mosaic repeatedly attempted to blame the air quality violations on the road construction to widen the highway, but Mrs. Killebrew pointed out that she had taken several years of photographs of the severe air quality violations when no widening or other construction of State Road 674 was occurring.

Mrs. Killebrew also referenced a Request for Additional Information (RAI) question posed by Mr. Oros of SWFWMD asking Mosaic to quantify the volume of water for mining cuts and rotation to, and use of, a settling pond. Mosaic stated that it **has no knowledge of the amount of ground water used because they (Mosaic) do not measure that pumpage.**

Mrs. Killebrew confirmed that lack of information during a discussion with Mr. Balser, SWFWMD, when he confirmed that SWFWMD does not have that water use information and that water use information is not reported as part of Mosaic's combined mega water usage. Mrs. Killebrew stated that she did not understand how Mosaic could be considered a "green" company with long-term, continuing water and air quality violations.

5/16/12 Mrs. Killebrew received an email from Mr. Randy Merchant (Randy.Merchant@DOH.state.fl.us), in response to the email she had sent to the Florida Department of Health (FDOH) on 5/11/12 stating that "dust" (particulate matter) is dangerous to our health and detailed information about the harm that dust does to humans. Mrs. Killebrew also sent an email to Mr. Merchant (DOH.state.fl.us) thanking him for his email response about health problems caused by "dust" (particulates). Mrs. Killebrew also explained that she had spoken with Mr. Stubbs, the FDEP mining regulator, regarding two "dust" houses for phosphate unloading in the Ft. Lonesome area and was told about state regulations regarding dust saturation level.

6/18/12 Mrs. Killebrew called Mosaic and spoke to Mr. Land, regarding the severe dust (particulate) violations that her family and livestock were being subjected to because of Mosaic's mining, but Mosaic did nothing.

10/11/12 Mrs. Killebrew received a telephone call from Marvin Blount, EPCHC (Blount@epchc.org), regarding dust in the vicinity of Mosaic's Four Corners mine. He requested that they call him directly when they were having air quality problems from mining dust and stated that the Killebrews were the only ones who filed complaints about air quality violations from Mosaic's mining.

10/16 /12 Mrs. Killebrew had a telephone conversation with Mr. Hardy, who lives in the Killibrews' neighborhood. Mr. Hardy stated that he had called Marvin Blount of EPCHC to report vast dust clouds and that Mr. Blount had stated that Mosaic claimed that road department was at fault. Mr. Hardy also stated that he had called the project engineer for DOT, Laura Weakley and Ms. Weakley stated to Mr. Hardy that lane construction (working on 674 widening and repair work) was not being conducted in that area during the previously referenced dust report sent EPCHC. Ms. Weakley further stated that she took photographs and that her phone number was 941-724-0924 if anyone wanted additional confirmation that DOT was not causing the air quality problems.

12/17/12 During a search of SWFWMD's online site, Mrs. Killebrew discovered a copy of a letter dated 12/17/12 that Andrea Hughes, SWFWMD Environmental Scientist, had sent to David B. Jellerson, Assistant Vice President for Mosaic Fertilizer LLC, advising Jellerson that she was:

- 1) granting Mosaic an extension until January 2014 – which was the 2nd extension granted by the SWFWMD – for "remediation" by Mosaic of the lowered water table caused by Mosaic's MU19 mining; and
- 2) granting Mosaic permission to change a "sealing well" to a "mitigation well" to produce water to pump into a "mitigation" pit.

The letter included no information regarding how these repeated time extensions by SWFWMD staff for Mosaic to continue violations of its permit conditions to maintain pre-mining water levels was affecting surrounding property owners and residents like the Killebrew family or the environment.

12/26/12 Mrs. Killebrew sent an email to Andrea Hughes, SWFWMD, referencing Ms. Hughes' letter to Jellerson dated 12/07/12.

Mrs. Killebrew explained that the Killebrews cannot survive the economic hardship caused by SWFWMD's continuing failure to enforce permit requirements that Mosaic maintain water levels and that the lowered water levels are preventing the Killebrews from growing grass to feed their cattle.

Mrs. Killebrew further expressed her shock over the total lack of logic in SWFWMD allowing Mosaic to pump even MORE ground water through "sealing/mitigation" wells to pump that water into a "mitigation" pit where the water would evaporate rapidly.

Mrs. Killebrew received no response to her email from Ms. Hughes.

2013

1/16/13 Mrs. Killebrew sent another email to Andrea Hughes, SWFWMD, repeating the comments stated in Mrs. Killebrew's email dated 12/26/12, allowing Mosaic to wait until January **2014** to correct the problem with lowered water levels.

Mrs. Killebrew cited Mosaic's WUP 20011400.025 as a legal document that states Mosaic must prevent "adverse impacts" to neighbors.

Mrs. Killebrew also requested permission to view SWFWMD's file, where all of the documents related to complaints about Mosaic's mining were located.

Requirements of WUP 20011400.025 require that all complaints related to the mining were to be tabulated in a clearly stipulated manner to include a response to complainant within 20 days.

Mrs. Killebrew received no response from Ms. Hughes regarding Mrs. Killebrew's request.

3/19/13 Mrs. Killebrew researched online records recently posted by SWFWMD and discovered that SWFWMD and Mosaic again conspired to subvert complaints by the Killebrews to benefit Mosaic at the expense of the Killebrews.

Documents and maps dated November 20, 2009, illustrated that groundwater withdrawals from well 20009017.006 had been renewed for another ten years illegally for lessee's Ag-Mart Farms when Ag-Mart was no longer on that property. That agriculture permit then was changed to an adjacent "sealing well" with withdrawals increased by approximately a million gallons per day, using the Killebrew's complaints about dust, water, and over-pumping complaints to justify Mosaic's "need" for an "augmentation" well to withdraw even more water.

See the reference to illegal use of water by Mosaic that occurred on 11/20/09, but was not revealed until now.

* **BOCC = Board of County Commissioners (Hillsborough County)**

* **EPCHC = Environmental Protection Commission of Hillsborough County**

* **FDEP = Florida Department of Environmental Protection**

* **PGMD = Planning & Growth Management Department of Hillsborough County**

* **SWFMWD = Southwest Florida Water Management District**

* **USACOE = U.S. Army Corps of Engineers**

* **USEPA = U.S. Environmental Protection Agency**

ATTACHMENT B

<http://www.palmbeachpost.com/ap/ap/top-news/tampa-area-man-swallowed-by-sinkhole/nWdSP/>

By CHRIS O'MEARA

The Associated Press

SEFFNER, Fla. —

A police spokesman in Florida says they are starting a recovery effort to find a man who was swallowed up by a sinkhole at his home.

Hillsborough County Sheriff's Office spokesman Larry McKinnon said Friday they asked sinkhole and engineering experts to come to the home near Tampa. The experts are using equipment to see if the ground can support the weight of heavy machinery that is needed for the recovery effort.

Jeremy Bush, who was home at the time, says he fears his brother Jeff has died. He ran into his brother's bedroom when he disappeared into the sinkhole Thursday night, but he says he could not save him.

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<http://www.usatoday.com/story/news/nation/2013/03/04/sinkhole-seffner-florida/1963175/>

Another suspected sinkhole opens up in a Fla. neighborhood

WTSP-TV, Tampa-St. Petersburg, Fla. 5:47p.m. EST March 4, 2013

This apparent sinkhole is about two miles from where one opened up on Thursday, killing a man whose bedroom was above it.

Another sinkhole appears to have opened up in a Seffner, Fla., neighborhood, the second time in less than a week.

Hillsborough County Fire Rescue and code enforcement have responded to Cedar Tree Lane to determine if it is safe for families to stay in their homes.

Sky 10 footage shows the hole is about 10 feet across, and is straddling across a fence, affecting at least two properties.

That location is about two miles from where a sinkhole opened up underneath a house Thursday night, killing Jeff Bush. Crews are in the process of demolishing that home.

STORY: Demolition reveals huge sinkhole <<http://www.usatoday.com/story/news/nation/2013/03/04/sinkhole-home-florida/1961997/>>

MORE: Additional coverage from WTSP <<http://www.wtsp.com/news/topstories/article/302137/250/Another-suspected-sinkhole-opens-up-in-Seffner>>

* 5:57 am

Hillsborough County Fire Rescue and code enforcement officials were on the scene this weekend in Seffner for the opening of another sinkhole, which has, as expected, led to another round of comments from Brandon Patch readers.

"Someone needs to figure out why these sinkholes are happening and we all need to keep a lookout no matter where you are," wrote Brandon Patch reader Stacie Jones. "And we need to find a way to prevent these sinkholes because they are scary."

"If they are going to report every sinkhole that opens up in Florida, they might as well start a newspaper dedicated to it," he said. "I've lived in Pinellas County for 42 years and cannot even come close to remembering all that I have seen."

See what else readers are saying, and add your comments to the mix, at Another Sinkhole Opens in Seffner
<<http://brandon.patch.com/articles/another-sinkhole-opens-in-seffner>> .

RELATED SEFFNER SINKHOLE COVERAGE:

- * Community Aids Displaced Seffner Sinkhole Victims <<http://brandon.patch.com/articles/community-aids-displaced-seffner-sinkhole-victims>>
- * Memorial Announced for Sinkhole Victim <<http://brandon.patch.com/articles/memorial-announced-for-sinkhole-victim>>
- * Jaudon Family Displaced in Seffner Sinkhole Tragedy <<http://brandon.patch.com/articles/jaudon-family-displaced-in-seffner-sinkhole-tragedy>>
- * HuffPost Live Looks at Seffner Sinkhole Tragedy: 'Saving Us From Sinkholes'
<<http://brandon.patch.com/articles/huffpost-live-looks-at-seffner-sinkhole-tragedy-saving-us-from-sinkholes>>
- * Heartfelt Words for Jeffrey Bush, New Sinkhole 'Vacate' Sign Posted <<http://brandon.patch.com/articles/heartfelt-words-for-jeffrey-bush-new-vacate-sign-posted>>
- * Seffner Sinkhole Video: 'In a Flash It Happens and the Whole World's Changed'
<<http://brandon.patch.com/articles/seffner-sinkhole-video-in-a-flash-it-happens-and-the-whole-world-s-changed>>
- * Video: Final Walls Come Down on Seffner Sinkhole at 240 Faithway Drive
<<http://brandon.patch.com/articles/video-final-walls-come-down-on-seffner-sinkhole-at-240-faithway-drive>>
- * 2nd Seffner Sinkhole Under Investigation as Stabilization Work Continues
<<http://brandon.patch.com/articles/second-seffner-sinkhole-under-investigation-as-faithway-drive-stabilization-work-continues>>
- * Bush Family Place Memorial Flowers, Mementos in 1st Bucket of Sinkhole Gravel
<<http://brandon.patch.com/articles/jeffrey-bush-family-places-memorial-flowers-mementos-in-first-bucket-of-sinkhole-gravel>>
- * Seffner Sinkhole Homeowner: 'God Has a Plan' <<http://brandon.patch.com/articles/seffner-sinkhole-homeowner-god-has-a-plan-photos-and-video>>
- * Seffner Sinkhole Victim Officially 'Presumed' Deceased <<http://brandon.patch.com/articles/seffner-sinkhole-victim-jeffrey-bush-officially-presumed-deceased>>
- * Readers React to Seffner Sinkhole Tragedy <<http://brandon.patch.com/articles/readers-react-to-seffner-sinkhole-tragedy>> <<http://brandon.patch.com/articles/seffner-sinkhole-victim-jeffrey-bush-officially-presumed-deceased>>
- * Family Treasures Salvaged from Seffner Sinkhole Demolition <<http://brandon.patch.com/articles/family-treasures-items-salvaged-from-seffner-sinkhole-demolition>>
- * Demolition Under Way at Seffner Sinkhole Site <<http://brandon.patch.com/articles/demolition-under-way-at-seffner-sinkhole-site>>
- * More Photos From the Seffner Sinkhole Site <<http://brandon.patch.com/articles/more-photos-from-the-seffner-sinkhole-site>>
- * Memorial Forms at Seffner Sinkhole Site, 'Angels Among Us' Observed
<<http://brandon.patch.com/articles/memorial-forms-at-seffner-sinkhole-site-angels-among-us-observed>>
- * Seffner Sinkhole Operation Readies for Impending Demolition <<http://brandon.patch.com/articles/seffner-sinkhole-operation-readies-for-impending-demolition>>
- * 3rd Home 'Compromised' at Seffner Sinkhole Site; Relief Fund Established <<http://brandon.patch.com/articles/3rd-home-compromised-at-seffner-sinkhole-site-relief-fund-established>>
- * Video: Deputy Douglas Duvall Recounts Seffner Sinkhole Heroics <<http://brandon.patch.com/articles/video-deputy-douglas-duvall-recounts-seffner-sinkhole-heroics>>
- * Situation 'Extremely Unsafe' at Seffner Sinkhole Site <<http://brandon.patch.com/articles/situation-extremely-unsafe-at-seffner-sinkhole-site>>

- * Family Member Recalls Horror of Seffner Sinkhole Tragedy <<http://brandon.patch.com/articles/family-member-recalls-horror-of-seffner-sinkhole-tragedy>>
- * Photos From the Scene of Sinkhole in Seffner <<http://brandon.patch.com/articles/photos-from-the-scene-of-sinkhole-in-seffner>>
- * Video: Hillsborough Fire Chief Discusses Seffner Sinkhole <<http://brandon.patch.com/articles/video-hillsborough-fire-chief-discusses-seffner-sinkhole>>
- * Hillsborough County Among Top 10 Sinkhole-Prone Florida Counties
<<http://brandon.patch.com/articles/hillsborough-county-among-top-10-sinkhole-prone-florida-counties>>
- * Update: Sinkhole Swallows Seffner Man Sleeping in Bed <<http://brandon.patch.com/articles/sinkhole-swallows-man-sleeping-in-bed-near-brandon>>
- * Video of Deputy Who Worked To Save Men From Sinkhole <<http://brandon.patch.com/articles/video-of-deputy-who-worked-to-save-men-from-sinkhole>>
- * Video: Man Could Hear His Brother Screaming
<http://www.baynews9.com/content/news/baynews9/video.html?clip=http://static.baynews9.com/newsvideo/bn9/web_video/Jeremy_Bush_31.f4v&vtitle=Man%20could%20hear%20brother%27s%20screams%20in%20sinkhole>
- * Video: Fire Chief Answers Questions <<http://brandon.patch.com/articles/video-hillsborough-fire-chief-discusses-seffner-sinkhole>>

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<<http://brandon.patch.com/topics/Sinkholes>>

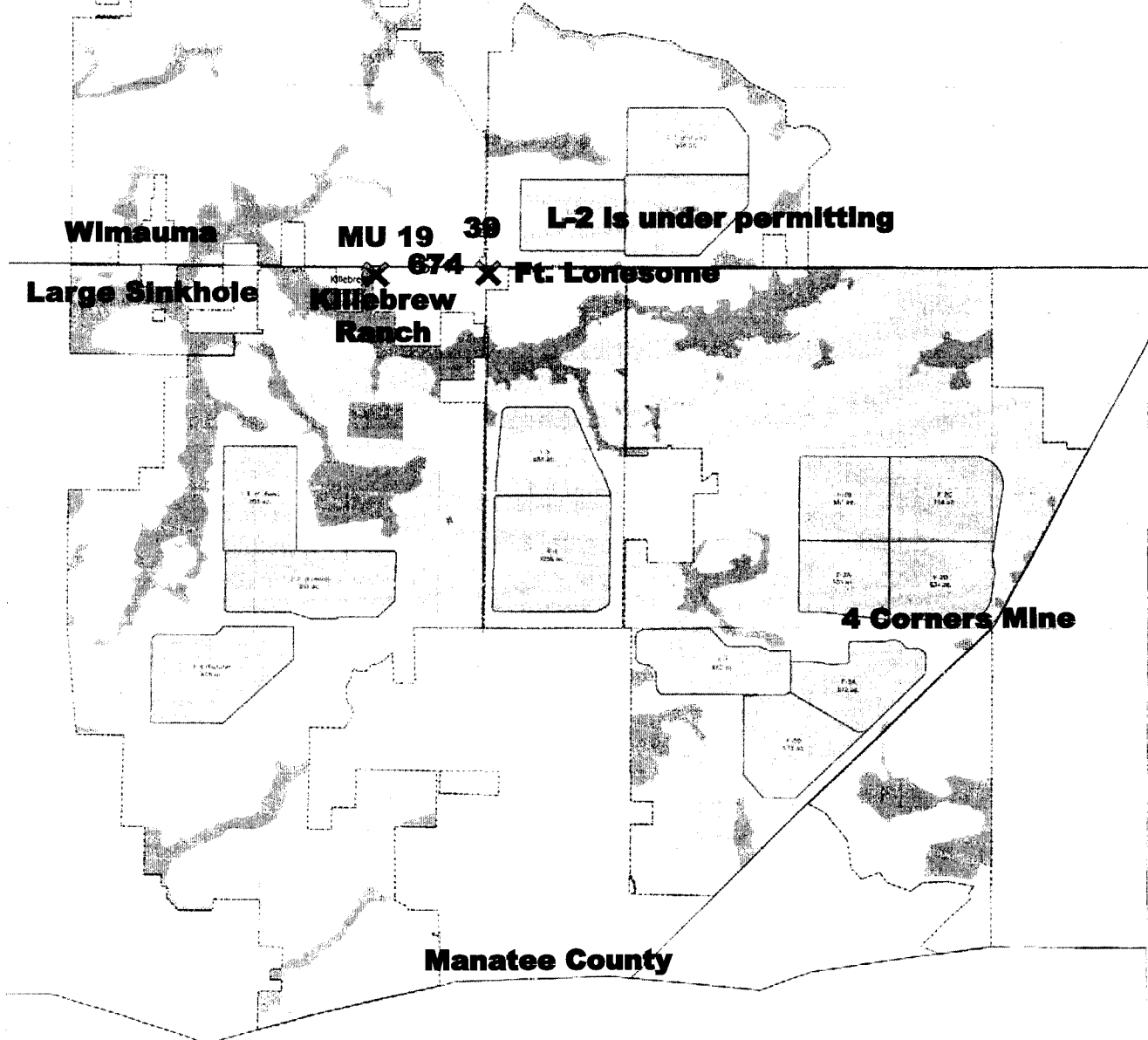
**mine pit for Tampa Bay water
8.4 miles north of these mine slime pits**

2 Sinkholes

Balm, FL at Dump X 672

**Sinkholes reported within 5 miles
of L1, L2 and L3 mine slurry pits**

**Mining here on Hurrah Creek affects
Alafia River and Tampa Bay Water mine pit**



Legend



Mosaic

**Four Corners / Lonesome Mine
Conceptual Plan**

FCL-CPH

**Waste Disposal
Areas**

Map #3

as is' basis. The District specifically disclaims any warranty, either expressed or implied, including, but not limited to, the
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March 17, 2013



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JUN - 7 2013

Mr. Michael J. DeNeve, P.G.
Permitting Manager
Mosaic Fertilizer, L.L.C.
13830 Circa Crossing Drive
Lithonia, Florida 33547

Subject: Mosaic Fertilizer, L.L.C., SAJ-2011-1869, Ona Phosphate Mine

Dear Mr. DeNeve:

The U.S. Environmental Protection Agency Region 4 received a courtesy copy of your letter dated April 29, 2013, addressed to Mr. John Fellows, Jacksonville District Corps of Engineers, Tampa Permits Section. Outlined in this letter was Mosaic Fertilizer's intent to revise its existing Section 404 Permit Application for the 22,320-acre Ona Phosphate Mine (Ona Mine). The letter stated that the intent to revise their application was Mosaic Fertilizer's response to one of the EPA's comments submitted to the Jacksonville District during the permit's Public Notice (PN) period. The letter also indicated Mosaic Fertilizer's intent to demonstrate consistency with the recently developed Priority Avoidance Criteria of the Proposed Mitigation Framework as outlined in Chapter 5 of the Central Florida Phosphate District (CFPD) Areawide Environmental Impact Statement.

The EPA had three main comments to the Ona Mine project as presented in the June 1, 2012, PN. The EPA's three comments were related to: 1) avoidance of waters of the U.S., 2) the requested permit duration of 45 years and 3) the lack of a compensatory mitigation plan. The April 29, 2013, letter focused on the comment related to avoidance. We look forward to working through the other two topics in the near future.

The proposed Ona Mine revision would avoid a total of 3,595 acres made up of uplands (2,158 acres) and waters of the U.S. (1,437 acres). The avoided waters of the U.S. would include 26,000 linear feet (lf) or 100 percent of the perennial streams in the project area, 116,000 lf or 52 percent of the intermittent and ephemeral streams, 1,088 acres of forested wetlands (45 percent of the forested wetlands) and 209 acres herbaceous wetlands (21 percent of the herbaceous wetlands). The proposed forested wetland revision would avoid 61 acres or 48 percent of the Bay Swamps in the project area. Bay Swamps are considered unique to the CFPD landscape and are one of the most difficult forested wetland systems to create. Bay Swamps tend to be found at the higher elevations of a slope where ground water begins to seep out and become surface water.

The proposed Ona Mine revision avoids the aquatic resources that the EPA believes are preferable to avoid and in the following hierarchy: perennial and intermittent streams, forested wetlands, herbaceous wetlands that are of high quality and the landscapes where these systems are contiguous.

The EPA believes the proposed revision is consistent with the mitigation sequencing avoidance requirement as defined in the 2008 Compensatory Mitigation Rule (33 CFR Part 332). Thus, this revision would satisfy EPA's concern regarding avoidance of the waters of the U.S. at Mosaic's proposed Ona Mine.

This proposed revision represents a significant step forward and we appreciate your work with us to identify and avoid impacts to these aquatic resources. If you have any questions relating to this letter please feel free to contact me at (404) 562-8357 or Mr. Duncan Powell of my staff at (404) 562-9258.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Stanley Meiburg'.

A. Stanley Meiburg
Acting Regional Administrator

cc: Mr. John Fellows
U.S. Army Corps of Engineers

Colonel Alan Dodd
Jacksonville District Commander

Ms. Nancy Stoner
U.S.EPA Headquarters

Ms. Denise Keehner
U.S.EPA Headquarters



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
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June 20, 2013

Donald W. Kinard
Chief, Regulatory Division
Jacksonville District, U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

**Subject: EPA's Comments on the Final Areawide Environmental Impact Statement
for the Central Florida Phosphate District, located in Charlotte,
DeSoto, Hardee, Lee, Manatee, Polk, and Sarasota Counties, Florida
EIS Filed Date: 04/26/2013; CEQ Federal Register Date: 05/03/2013
CEQ Number: 20130117; ERP Number: COE-E67007-FL**

Dear Mr. Kinard:

Pursuant to Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the Final Areawide Environmental Impact Statement (FAEIS) on Phosphate Mining in the Central Florida Phosphate District (CFPD) developed by the U.S. Army Corps of Engineers (USACE), Jacksonville District, using a third-party contracting process as described in 40 CFR §1506.5. This EPA process was initiated because the USACE has received four applications for Department of the Army permits under Section 404 of the Clean Water Act (CWA) from Mosaic Fertilizer, LLC and CF Industries, Inc. (the Applicants) for four proposed phosphate mining projects in the CFPD (referred to locally as the "Bone Valley"). The specific projects currently being reviewed by the USACE are the subject of this AEIS (including their Department of the Army permit application numbers) are: Mosaic's Desoto Mine (SAJ-2011-01968); Mosaic's Ona Mine (SAJ-2010-03680); Mosaic's Wingate East extension of the Wingate Creek Mine (SAJ-2009-03221); and CF Industries' South Pasture Mine Extension (SAJ-1993-01395).

The scope of the proposed action includes creating new phosphate mines, expanding existing mines and constructing attendant facilities. As proposed, these actions would result in the discharge of fill into Waters of the United States. EPA notes that USACE determined that when viewed collectively, the separate proposed phosphate mining projects have similarities that provide a basis for evaluating their direct, indirect and cumulative environmental impacts in a single AEIS and this FAEIS evaluates the environmental and economic impacts of the Applicants' four proposed mines (the Applicants' Preferred Alternatives), as well as the impacts associated with a No Action Alternative and other reasonably foreseeable alternatives in the CFPD. EPA understands that this AEIS serves dual purposes, both as a Regulatory EIS for the four specific mine applications, as well as a holistic areawide mining

environmental impact study. EPA also notes that over 20 municipal and county governments in the region agreed to become Participating Agencies to the USACE on the AEIS.

In a letter dated September 14, 2010 USACE offered EPA, as well as the Florida Department of Environmental Protection (FDEP), an opportunity to become a "Cooperating Agency" to the USACE in the development of this AEIS for phosphate mining in the CFPD. EPA accepted the USACE offer to serve as a Cooperating Agency in our letter sent to the USACE on October 14, 2010, and EPA noted that FDEP accepted on January 25, 2011.

EPA has supported the development of an AEIS for the CFPD, with a goal of bringing together local, state, federal agencies and the industry involved in phosphate mining in the Bone Valley and developing a comprehensive AEIS that fully analyzes the secondary and cumulative impacts of phosphate mining. EPA also concurred with the USACE retaining an EIS contractor (utilizing the 3rd Party NEPA process) to develop this AEIS and we appreciate the USACE making development of this important AEIS a high priority. As a part of the AEIS, USACE worked with EPA, other local, state and federal agencies, the Applicants and NGOs to develop a conceptual model for addressing wetland avoidance, minimization and mitigation for the AEIS mining permits. This conceptual model is referred to as the "Framework". It is also EPA's understanding that the Framework will be used as a foundation for any future proposed phosphate mining permits within the CFPD.

EPA worked with USACE on an aggressive schedule that yielded a comprehensive DAEIS in less than 18 months from the date of the publication of the Notice of Intent (NOI) and the publication of the FAEIS approximately 12 months later. The AEIS development and review has been a multi-program effort within EPA.

EPA commented on the DAEIS in a letter dated July 20, 2012, and provided recommendations regarding the wetlands avoidance, minimization and mitigation analysis of river flow and runoff, water quality analysis and impacts, the long duration of permits, groundwater analysis and impacts and the economic analysis. Through a proactive collaborative approach between the Corps, EPA and other stakeholders, most of these issues were resolved before the release of the FAEIS. The FAEIS was filed with EPA, noticed in the federal register on May 3, 2013 and submitted to EPA for review. Based on our multi-program review, we identified the following outstanding issues that are discussed below.

Gypsum Stack

Although gypsum stacks are related to the phosphate mining activities, the issues and impacts relating to gypsum stacks are being addressed independent of this FAEIS through a separate permitting mechanism.

Wetlands Avoidance, Minimization and Mitigation Framework:

EPA is encouraged by the proactive and collaborative approach that USACE has displayed while working with EPA, over 20 local, state and Federal organizations, the Applicants, NGOs during the AEIS process. EPA commends the USACE for working closely with these widely diverse organizations and the public to develop and adopt the Framework (as outlined in Chapter 5). We consider this approach to be a conceptual model that the USACE could use for other regulatory EIS permitting

actions. To ensure the success of the Framework, we highly recommend that the USACE continue their collaborative efforts with these entities pre and post permit issuance. We also feel confident that any remaining EPA issues associated with wetlands avoidance, minimization and mitigation will be addressed through continued collaboration and creative problem solving. It is EPA's understanding that the USACE will continue to build upon the strong foundation established during the extensive AEIS process. EPA understands and also supports USACE's decision to create an Interagency Review Team (IRT) as outlined in the conceptual Framework. The IRT will be charged with taking the conceptual Framework and shaping it into a practical, useful tool for issuing and implementing the 4 proposed permits outlined in the AEIS and potentially future phosphate mining within the CFPD. Further, EPA understands that the IRT intends to work collaboratively to develop a robust monitoring and adaptive management plan, which should include performance and/or success criteria that should result in optimization of wetlands avoidance and minimization and implementation of mitigation measures and controls. EPA supports USACE including examples of possible compensatory mitigation performance standards, monitoring requirements and adaptive management plan permit conditions as outlined in Appendix I. Because of the risks and uncertainties associated with the long duration of the proposed permits, EPA supports USACE making monitoring and adaptive management measures commitments in both the ROD-SOF and within special conditions for each of the permits.

We also understand that USACE will incorporate non-wetlands related mitigation commitments within the ROD. EPA supports this approach and encourages the USACE to continue dialogue with the EPA especially regarding issues relating to surficial aquifers and minimum flow levels (MFLs).

RECOMMENDATION: EPA recommends USACE continue to work with EPA to establish an IRT, which will implement the Framework as outlined in Chapter 5 and consider permit conditions similar to those outlined in Appendix I of the FAEIS. EPA commends the USACE for this forward thinking, solutions oriented approach and looks forward to working together to ensure future success.

Duration of Permit:

EPA understands that lengthy permit durations are being considered for the proposed projects. EPA notes that long duration permits can involve substantial risk for increases in environmental impacts over time as technical, biological, climatic, economic and legal conditions may change over such a long duration.

RECOMMENDATION: As previously noted, EPA recommends that shorter permit durations be considered with the entire proposed mine area potentially covered as sequential individual permits for shorter terms instead of a single long permit. As a part of the Framework, EPA recommends permit conditions (similar to those outlined in Appendix I) that require periodic IRT reviews of mining and mitigation activities at least every 5 years, as well as annual or semi-annual substantive reporting of mining and mitigation efforts. To offset the risk and uncertainty of having such long duration permits, EPA recommends that the IRT use a monitoring and adaptive management plan (similar to the example provided in Appendix I) to ensure mitigation measures are working. Lastly, EPA recommends the RODs reflect USACE's commitment to offset the risk and uncertainty associated with having such long permit durations by establishing the IRT to develop the monitoring and adaptive management plan.

Surficial Water and MFLs:

Throughout the review of the FAEIS, EPA has expressed concern regarding the potential impacts of the mining activities on the surficial aquifer and surface water flows in the areas affected by the projects. In response to our concerns, updated modeling and groundwater analysis was added to the FAEIS. One remaining critical concern of EPA is ensuring that minimum flows and levels as required under state law are maintained in surrounding rivers and streams adequate to be protective of water quality standards such that biological integrity of these systems is maintained during the mining activities. It is our understanding that the South Florida Water Management District (SFWMD) requires a Consumptive Water Use Permit for phosphate mining operations. These permits allow the permittee to withdraw a specified amount of water, either from the ground, a canal, a lake or a river. The water can be used for a public water supply; to irrigate crops, nursery plants or golf courses; or for industrial processes (such as phosphate mining). The SFWMD reviews these permits to ensure that the proposed use is reasonable and beneficial as defined in Section 373.019 of the Florida Statutes, that the proposed project will not interfere with other water users in the vicinity, that the proposed withdrawal is consistent with the public interest, and that the withdrawal will not harm the environment (SFWMD website: <http://www.sfwmd.gov/portal/page/portal/levelthree/permits>).

RECOMMENDATION: EPA understands that the SFWMD consumptive water use permit has special conditions that the permittee shall mitigate impacts such as causing harmful movement of contaminants in violation of state water quality standards and significant impacts to hydroperiods for surrounding systems (Consumptive Water Use, Basis of Review Document, Section 5). EPA supports these protective conditions to alleviate any adverse conditions caused by water withdrawals associated with phosphate mining. EPA recommends that the USACE include SFWMD consumptive water use permit special conditions in both the ROD-SOF and in the project specific Section 404 permits. Further, we recommend that the IRT continue to monitor and review applicable water use permits and when appropriate, use an adaptive management approach to ensure permit conditions are met.

Buffers and Ditch/ Berm System:

Chapter 5 discusses wetland and stream buffers in relationship with the mining operations ditch and berm system and displays several photos and graphs illustrating the location of the buffers. However, there is still ambiguity and inconsistency in the way the buffers are represented in the FAEIS. It is EPA's understanding of the diagrams and written discussion that the buffer applies to a 30' to 150' area upslope of the wetlands jurisdictional delineation line to the toe of the berm system and that this area will remain completely undisturbed.

RECOMMENDATION: EPA supports the inclusion of the use of buffers to minimize impacts to jurisdictional waters. However, EPA recommends the USACE clearly describe the buffer length in relationship with the ditch and berm system in the special conditions of the permit and within the ROD-SOF.

Tribal Consultation:

The FAEIS discusses coordination of potential effects with the federally listed Native American Tribes' Tribal Historic Preservation Office (THPO) and also states that any mitigative measures

identified during the coordination process should be documented in the project-specific ROD-SOF before issuance of permit decision. There is no documentation of any tribal consultation, but EPA understands that coordination is ongoing. EPA encourages consultation and coordination with the Tribes at all levels of decision-making. The EPA works closely with both the Miccosukee and the Seminole Tribes on environmental matters and is committed to working with other federal partners to prioritize the Tribes' water quality and water management concerns.

RECOMMENDATION: EPA recommends USACE consult and coordinate with the Tribes through completion of the reviews and issuances of the Section 404 permits for each proposed mine. These consultation and coordination efforts should be documented in the permit specific ROD-SOFs.

Economic Analysis:

EPA appreciates the significant amount of work that has been done to quantify the direct economic impacts of several different mining options. While the analysis detailed in the document provides useful information for decision makers, EPA thinks the economic analysis could be more comprehensive. The economic analysis as presented considers only direct distribution of benefits of phosphate production throughout the area. EPA continues to recommend the consideration of social costs (or negative benefits) in the economic analysis such as changes in valued ecosystem functions, reduced recreational opportunities, human health effects, non-use values, aesthetic changes and effects on endangered species. We also think that ecological modeling results should factor prominently within the economic analysis.

RECOMMENDATION: Although EPA understands the resource constraints of conducting economic analyses, we continue to recommend that the USACE consider using a dynamic model (similar to REMI) including the social costs of future phosphate mining permit actions.

Conclusions:

The USACE has worked collaboratively and proactively with EPA and other federal agencies, local and state agencies, the Applicants, NGOs and the public to balance the needs of the industry and the environment. We are supportive of the proposed conceptual Framework and the monitoring/adaptive management approach. EPA looks forward to working with the USACE in practically applying the conceptual Framework in the review of the proposed permit applications as well as any future phosphate mining permit applications within the CFPD. We will work with USACE in reviewing the proposed permit 404(b)(1) packages and assist the USACE in development of the ROD-SOF for each of the proposed projects.

EPA strongly supports the approach as discussed in the FAEIS. However, although most of our issues have been satisfactorily addressed, we continue to have some remaining concerns as outlined in this letter. We believe that most of these concerns can be successfully resolved through continued dialogue and proactive problem solving between our two agencies. EPA requests the opportunity to review any future NEPA documents on this project and reserves the right to provide the USACE with additional comments within the appropriate time period.

EPA appreciates the opportunity to serve as a Cooperating Agency in the development of the AEIS and we look forward to continued implementation of this approach. If you wish to discuss our comments, please contact me at 404-562-9611 or Jamie Higgins at 404-562-9681 and Duncan Powell at 404-562-9258 for Section 404 issues.

Sincerely,

A handwritten signature in black ink, appearing to read "Mueller", with a stylized, cursive script.

Heinz J. Mueller, Chief
NEPA Program Office
Office of Environmental Accountability

cc: John Fellows
AEIS Project Manager



Bartley Arrington
Manager Mine Permitting

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VIA: E-mail and US Mail

December 6, 2013

Mr. Mark Peterson
Department of the Army
Jacksonville District Corps of Engineers
Tampa Permits Section
10117 Princess Palm Avenue, Suite 120
Tampa, Florida 33610

Re: Mosaic Fertilizer, L.L.C.
DeSoto Mine – AEIS Framework Consistency
File SAJ-2011-01869

Dear Mr. Peterson:

Mosaic Fertilizer, L.L.C. (Mosaic) intends to submit a revised 404 Application for the DeSoto Mine located in DeSoto County, Florida. The purpose of the revised application is to address comments by the Environmental Protection Agency (EPA) in the 3(a) and (b) letters dated July 30, 2012 and August 23, 2012 respectively, and to demonstrate consistency with the Final Area-wide Environmental Impact Statement (AEIS). In particular, the revised application is intended to demonstrate compliance with the Clean Water Act (CWA) 404(b)(1) Guidelines, and consistency between the Priority-Based Avoidance Framework ("Framework") outlined in Chapter 5 of the AEIS and the avoidance boundary that will be included in the revised 404 application.

The avoidance boundary, described in this letter (referred to as "Plan C") and depicted on the attached map, is the result of multiple discussions, site visits, and meetings over the last two years between Mosaic, agencies, and other special interest groups. It is also based on the principles reflected in the AEIS.

In order to achieve this plan, Mosaic is negotiating an acquisition for conservation easements on nearby property, has reconfigured two clay settling areas (CSA), revised the mining and reclamation plans, and developed enhancement plans for avoided areas. Below is a summary of the proposed avoidance plan.

Plan C Wetland Avoidance	Acres¹	% Avoidance
Total Site	18,287	
Total Acres Avoided	2,079	11.4%
ACOE Wetlands Avoided	1,368	33%
ACOE Framework Wetlands Avoided	1,246	46%
ACOE Framework Forested Wetlands Avoided	1,111	47%
> 0.7 WRAP	769	63%
< 0.7 WRAP	342	30%
Bay Systems	129	52%
ACOE Framework Herbaceous Wetlands ² Avoided	135	38%

Plan C ACOE JD Stream Avoidance	Linear Feet	% Avoidance
Streams – Avoided	~73,790	57%
Un-ditched Natural Streams – Avoided	~71,900	79%
Perennial Streams – Avoided	~13,010	100%

Priority-Based Avoidance Framework

In addition to review of the CWA 404(b)(1) Guidelines, based on Mosaic's internal review of Chapter 5 found in the AEIS, the following criteria were analyzed during avoidance assessment. Areas that met more than one criterion were given a higher avoidance priority.

PRIORITY AVOIDANCE CRITERIA

- Perennial and Natural Intermittent Streams³
- Forested Wetlands
- High Quality Herbaceous Wetlands (WRAP \geq 0.7)

¹ Please note: All acres, linear feet, and percentages presented in this letter are estimates pending the verification of the jurisdictional determination.

² Framework Herbaceous wetlands consist only of those scoring equal to or greater than 0.7 WRAP.

³ A natural intermittent stream that has adjacent forested wetlands and/or high quality herbaceous wetlands receives higher priority than a natural intermittent stream that doesn't have adjacent wetlands.

OTHER AVOIDANCE CONSIDERATIONS

- Wetlands within the Integrated Habitat Network (IHN)
- Wetlands based on Critical Lands and Waters Identification Project (CLIP)
- 100-Year Floodplains

Listed below are the proposed avoidance areas and supporting information regarding the priority avoidance criteria. These areas are also shown on the attached map.

1. **Horse Creek** – Perennial Stream & Adjacent Forested Wetlands, IHN, CLIP (1) & 100-Year Floodplain

Horse Creek is a significant drainage feature within the watershed and the forested riparian habitat will be avoided. The floodplain consists of forested wetlands, forested uplands, pasture and woodland pastures. Proposed as mitigation in the 404 application, several of the existing pastures will be restored to native cover/communities for enhanced wildlife habitat corridors and to improve the physical, biological, and chemical conditions of Horse Creek.

2. **Brandy Branch** – Intermittent Stream & Adjacent Forested Wetlands, IHN & 100-Year Floodplain

Brandy Branch is a significant drainage feature draining into Horse Creek, and therefore the forested riparian habitat will be avoided.

3. **Buzzards Roost Branch** – Intermittent Streams, Adjacent Forested Wetlands, 100-Year Floodplain, IHN & CLIP (2).

Buzzards Roost Branch is a significant drainage feature draining into Horse Creek, and therefore the forested riparian habitat will be avoided.

4. **Buzzards Roost Tributary** – Intermittent Streams, Adjacent Forested Wetlands and IHN

The northern reaches of this stream are affected by intensive agriculture yet segments of this system are of high ecologic value. Those portions of this system will be preserved and hydraulically connected while those portions of this system of lower ecologic value will be mined and reclaimed.

5. **Southeast Corner of DeSoto Mine** – Intermittent Streams, Forested Wetlands, High Quality Herbaceous Wetlands & CLIP (2)

The proposed preservation area in the southeast corner of the property located west of Horse Creek, is a large contiguous system of forested wetlands (including bay swamps), high quality herbaceous wetlands, and native upland habitat. No other contiguous on site

parcel within the Horse Creek watershed contains such diversity of native communities, which in this area include pine flatwoods and palmetto prairies, bay swamps and mixed wetland hardwood forests, freshwater and shrub marshes and wet prairies. This area supports future corridors to Horse Creek as broadly contemplated under the integrated habitat network (IHN) developed as a reclamation planning guide and the CLIP program.

Other Avoidance Considerations

IHN was originally developed by the Florida Department of Environmental Protection (FDEP) Bureau of Mine Reclamation (BOMR) as a planning tool to link corridors of un-mined lands with reclaimed lands. The primary purpose is to encourage mine operators to develop landscape scale reclamation plans that tie together the wildlife corridors in an integrated fashion. CLIP was designed as a GIS database with a very broad range of natural resource indicators at a landscape level. CLIP's utility is, however, not as accurate as the site specific mapping and habitat evaluations that have been performed at the DeSoto site.

The proposed avoidance plan is consistent with the intent of the IHN and CLIP. The Plan C avoidance plan offered under the Framework guidelines, provides distinct preservation corridors running along intermittent streams and wetland systems which ultimately lead to the Horse Creek preservation. The Horse Creek preservation provides a complete corridor from the south property boundary to the north property boundary in the middle of the project. In addition, post mining mitigation will provide an extensive stream and floodplain corridor throughout the DeSoto property. Preservation and mitigation will thus provide ample wildlife habitat and corridors through the property as contemplated by the IHN and CLIP planning guides.

Previous/Alternate Avoidance Plans

As previously mentioned, the proposed avoidance plan (Plan C) is the result of the past two years of collaboration between Mosaic, agencies, and other special interest groups. Several iterations were developed during this time frame; however, the proposed plan provides the greatest amount of avoidance to the priority based Framework wetlands. Several of these iterations are summarized below:

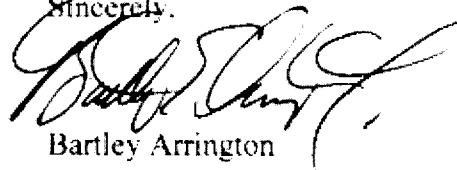
	June 2011 % Avoidance	Plan A % Avoidance	Plan B % Avoidance	Plan C % Avoidance
Framework Wetlands	27%	38%	40%	46%
Framework Forested Wetlands	31%	40%	42%	47%
Forested ≥ 0.7	43%	56%	57%	63%
Forested < 0.7	19%	23%	27%	30%
Bay Swamps	35%	42%	42%	52%
Framework Herbaceous Wetlands	0%	25%	25%	38%

Project/Design Modifications Required & Implemented

In order to achieve the significant avoidance obtained through Plan C, it was necessary to reconfigure the overall clay settling area (CSA) footprint and design. The capacity of two of the CSAs (D-2 and D-4) were augmented due to the additional avoidance. D-4 had to be reduced in size to accommodate additional preservation with a corresponding enlargement of D-1 to accommodate the lost volume in D-4.

We hope that this information assists you in the review of the proposed avoidance plan based on the priority-based avoidance Framework and the 404(b)(1) Guidelines. The revised DeSoto Mine 404 Application will of course contain many additional details regarding this proposed plan. Please contact me at 813-500-6891 if you have any questions or comments.

Sincerely,



Bartley Arrington

BEA/ck
Enclosure

xc: Duncan Powell – US EPA ✓
Calvin Alvarez – FDEP
Thomas Cookingham – DeSoto County
Diana Jagiella – Mosaic
Bryant Grant – Mosaic
Bill Brammell – Mosaic

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May 29, 2014

NOTICE OF INTENT TO SUE
VIA CERTIFIED MAIL - RETURN RECEIPT REQUESTED

THOMAS P BOSTICK
Lt. General, US Army Corps of Engineers
441 G Street, NW
Washington, DC 20314-1000

DANIEL M. ASHE
Director, US Fish & Wildlife Service
1849 C St., NW
Washington, DC 20240

GINA MCCARTHY, Administrator
US Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

ERIC H. HOLDER JR., ESQ.
Attorney General of the United States
US Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001

SALLY M. JEWELL
Secretary, US Department of the Interior
1849 C St., NW
Washington, DC 20240

**Re: REVISED 60-DAY NOTICE OF INTENT TO SUE
VIOLATIONS OF THE ENDANGERED SPECIES ACT; THE CLEAN WATER ACT;
THE CLEAN AIR ACT AND THE SAFE DRINKING WATER ACT REGARDING**

PROPOSED EXPANSION OF PHOSPHATE MINING IN CENTRAL FLORIDA

Dear Madams and Sirs:

This is to advise that our law firm has been retained to represent the following (collectively "the adversely affected parties") with respect to the Final Area-wide Environmental Impact Statement (AEIS) and the Addendum to the Final AEIS ("the revised Final AEIS") for proposed expansion of phosphate mining in central Florida ("proposed project"):

ManaSota-88, Inc. ("ManaSota-88")
Ecology Party of Florida, Inc. ("the Ecology Party")

Protect the Peninsula's Future
Northeast Georgia Children's Environmental Health Coalition ("the Coalition")
Clallam County Citizens for Safe Drinking Water ("CCC for Safe Drinking Water")
King County Citizens Against Fluoridation (KCCAF)
Sydney Bacchus, Ph. D. ("Dr. Bacchus")
Jack Cook ("Mr. Cook")
Dan Hilliard ("Mr. Hilliard")

ManaSota-88, the Ecology Party, individual members of these organizations, scientists and economists, the US Geological Survey ("USGS") and other agencies, organizations and individuals submitted detailed comments to the US Army Corps of Engineers (the "Corps") and US Environmental Protection Agency ("USEPA") describing gross deficiencies in the AEIS regarding evaluation of adverse environmental impacts of phosphate mining in central Florida. Examples of those comments, which include significant adverse impacts to the human environment that the Corps and USEPA failed to take a hard look at, are attached hereto as "Exhibit A" and are listed under the attachments, below. Not all of those comments were addressed or even included in the Final AEIS or the revised Final AEIS. Neither the Final AEIS nor the revised Final AEIS resolved those adverse impacts. Electronic copies of the Draft AEIS, Final AEIS and revised Final AEIS for the proposed project are available at the following link:
<http://yosemite.epa.gov/oeca/webeis.nsf/viAllByDate?SearchView&Query=%28Central+Florida+Phosphate%29&SearchOrder=4&SearchMax=0&SearchWV=true&SearchFuzzy=true&Start=1>

For example, the comment letter provided by Dr. Nora Demers on April 22, 2011 ("Exhibit A1") expressed concerns that the arbitrary AEIS Study Area boundaries don't include the Gulf "dead zone" which is well-established as resulting from runoff of agricultural fertilizers produced by existing phosphate mines and would continue if phosphate mining continues. Those fertilizers also are known to be causing eutrophication of ground waters and surface waters, including springs, throughout Florida. Dr. Sydney Bacchus submitted formal comment letters, including a comment letter with new information on February 27, 2012, with evidence that adverse impacts to wetlands from phosphate mining extends more than three miles (5 kilometers) beyond the Mosaic Fertilizer, LLC ("Mosaic") mine-site boundaries. The comments submitted to the Corps on May 22, 2013 by Sarasota County ("Exhibit A6") addressed the inadequacy of proposed mitigation and lack of consideration for mitigation that is known to be unsuccessful; the failure to resolve problems with aquifer recharge and drawdown; the inadequate assessment of cumulative impacts; the long-term adverse impacts of Clay Settling Areas ("CSAs"); the failure to address phosphogypsum stacks (aka "gypsum stacks" and "gypstacks") and alternatives such as importation of phosphate; and the fact that the consultants work for Mosaic and cannot be unbiased. Dr. Richard Weisskoff's comments, submitted on May 31, 2013 ("Exhibit A7"), described significant deficiencies in the economic analysis included in the AEIS. Those deficiencies included the failure of the AEIS to address adverse environmental justice impacts of the proposed expansion of phosphate mining. June 3, 2013 comments by the Ecology Party of Florida ("Exhibit A8") also described unaddressed adverse impacts beyond the AEIS Study Area.

Although the AEIS documents are posted on the USEPA web site and the majority of the adverse impacts not addressed in the AEIS are regulated by the USEPA, the preceding link identifies the Corps as the Lead Agency and the AEIS contact person is Corps' staff member John Fellows (see "Exhibit B"). In addition to the comments regarding adverse impacts of phosphate mining in Florida, that were directed to federal agencies involved with the AEIS, these agencies also received an earlier 60-day notice of intent to sue dated March 8, 2013 from this law firm. A copy of that 60-day notice is attached hereto as "Exhibit C."

That 60-day notice also referenced phosphate mine waste from existing phosphate mines in the Central Florida Phosphate District ("CFPD") that was the AEIS scope area, also known as the area of impact, for four additional, proposed phosphate mines. One of the adverse impacts described in that 60-day notice was from some of the phosphate mining waste produced in the CFPD, transported beyond the boundaries of the CFPD and disposed of in municipal water supplies in Athens-Clarke County, Georgia and other municipalities as chemicals for fluoridation. Figure ES-1 of the Executive Summary for the Final AEIS shows the location of the CFPD and the four proposed phosphate mine projects, in addition to the areas where historical and ongoing mining has occurred in the CFPD. The CFPD only includes areas in Charlotte, DeSoto, Hardee, Lee, Manatee, Polk, and Sarasota Counties, Florida. A copy of that 23-page Executive Summary, which was obtained from the following link, is attached hereto as "Exhibit D:"

FINAL Areawide Environmental Impact Statement on Phosphate Mining in the Central Florida Phosphate District: April 2013: Executive Summary - ExecutiveSummary.pdf

This 60-day notice revises and updates: a) the March 8, 2013 60-day notice, and b) the other comments regarding adverse impacts of phosphate mining submitted in response to the AEIS for the proposed new phosphate mines that the agencies failed to take a hard look at in the Final AEIS and in the revised Final AEIS. The analyses for water quality and economics described in the Final AEIS did not change in the revised Final AEIS after the Final AEIS was completed. Although review of the surface water analysis in the Final AEIS revealed that corrections were necessary, the corrections to the surface water analysis in the Addendum did not resolve the deficiencies described in the USGS comment letter included in Exhibit A or any of the adverse impacts from groundwater alterations addressed in comment letters for the AEIS. Examples of adverse impacts that the Final AEIS and revised Final AEIS failed to take a hard look at include the following:

1. constraining the purpose and needs statement to extracting phosphate ore, without any recognition of public interest and environmental protection of natural resources, which limited consideration of alternatives such as importing phosphate or no action;
2. Piney Point phosphate fertilizer mine waste;
3. failure to include the massive, catastrophic and radioactive adverse impacts of phosphogypsum stacks and associated hazardous waste byproducts which have no use and cannot be disposed of;
4. increased radiation contamination and air pollution caused by phosphate mining;
5. phosphate mine waste used for fluoridation of municipal waters;
6. conflict of interest of contractor hired by the Corps to model and evaluate adverse impacts of phosphate mining for the AEIS;
7. phosphate fertilizer causing eutrophication of ground water and surface waters;
8. the arbitrary and capricious restriction of the AEIS study area to the boundaries of the CFPD, which excludes adverse impacts to the Floridan aquifer system from phosphate mining in the Suwannee River basin and adverse impacts from fluoridation and fertilizers beyond the boundaries of the CFPD;
9. the inability of AEIS model, created by the Corps' contractor CH2M Hill, to address adverse water quality and hydrologic impacts of the preceding inadequacies, within and beyond the boundaries of the CFPD;
10. the long-term impacts of CSAs, which constitute at least 40% of the mined areas and adversely affect hydrology and the land, permanently limiting all future use of those and surrounding lands;
11. environmental injustice, including from adverse impacts of the proposed project beyond the boundaries of the CFPD;
12. adverse impacts to federally threatened and endangered species, including from adverse impacts of the proposed project beyond the boundaries of the CFPD;

13. the inability of the AEIS "mitigation" to address the adverse impacts of the preceding inadequacies from the proposed project, within and beyond the boundaries of the CFPD; and
14. the inability of the AEIS economic analysis to address the adverse impacts of the preceding inadequacies, within and beyond the boundaries of the CFPD.

Clearly, the failure of the federal agencies to take a hard look at the adverse impacts listed above prevents the Final AEIS and the revised Final AEIS from fairly evaluating the environmental and economic impacts of the Applicants' four proposed mines and, more accurately, the direct, indirect and cumulative impacts of phosphate mining in the area of impact – the regional aquifer system. This reality refutes the following statement on page ES-1 of the Executive Summary for the Final AEIS:

This Final AEIS (and the Draft AEIS on which it is based) evaluates the environmental and economic impacts of the Applicants' four proposed mines (the Applicants' Preferred Alternatives), as well as the impacts associated with a No Action Alternative and other reasonably foreseeable alternatives in the Central Florida Phosphate District (CFPD).

"Exhibit E," attached hereto, provides examples of adverse environmental and economic impacts related to the Piney Point phosphate fertilizer waste. "Exhibit E1" is a June 22, 2011 summary of the Piney Point problems from 1966 to 2011. "Exhibit E2" is May 11, 2014 description of the current problems with the Piney Point phosphate fertilizer waste and proposed \$25 million cost to taxpayers to inject that phosphate fertilizer waste into the aquifer system in Manatee County. This document identifies CH2M Hill as the contract engineering company for this project, again pointing to a conflict of interest with this firm's role in arbitrarily narrowing the adverse impacts considered in the AEIS.

The comment letter from the Ecology Party of Florida dated April 22, 2011 and "Exhibit F," attached hereto, provides additional evidence of a conflict of interest with AEIS Contractor CH2M Hill. "Exhibit F1" is a contract dated August 2, 2012, in the amount of \$162,315.00 between Manatee County and CH2M Hill, represented by Wendy Nero, Vice President and Area Manager from CH2M Hill's Tampa, Florida office. The contract is for wells to inject phosphate mine waste into the Floridan aquifer system. At the time this contract was negotiated, CH2M Hill was under contract with the Corps to produce the AEIS for increased phosphate mining in the CFPD that includes Manatee County. On May 13, 2014, Manatee County Commissioners held a public workshop on the proposed injection well for Piney Point phosphate waste where CH2M Hill responded to questions as the county's contractor for that proposed disposal well. A copy of the video of that meeting can be viewed at the following link:
<http://www.myanatee.org/home/government/board-of-commissioners/bocc-meetings/agendas/commission-meeting-video.html?referencedDocumentUUID=5b9e2423-08c2-4f7a-a929-9c182c2c9182>

Clearly CH2M Hill had an unexplored financial incentive to exclude addressing the adverse impacts from phosphate mine waste, primarily from phosphogypsum, in the AEIS when that company would be receiving more than \$150,000 from Manatee County to dispose of that waste. "Exhibit F" includes additional documents demonstrating a potential conflict of interest beyond the fact that CH2M Hill would be the Manatee County contractor to dispose of the Piney Point phosphate fertilizer waste by injecting it into the Floridan aquifer system. "Exhibits F2 and F3" are documents verifying that CH2M Hill was hired by the Seattle Public Utilities ("SPU") to design, build and operate water treatment facilities in Washington state, beyond the boundaries of the CFPD, to add phosphate mine waste for fluoridation. That water treatment facility included a \$200 million filtration system. The declaration of no conflict of interest to

the Corps in this instance is not the only time CH2MHill has been less than truthful in its disclosures.¹

"Exhibit G," attached hereto, addresses the massive radiation exposure caused by phosphate mining in central Florida. "Exhibit G1" is an example of this massive radiation exposure prepared in January 21, 2010 and "Exhibit G2" is water quality data showing high levels of radiation in a well on private property adjacent to phosphate mining in the CFPD. The following excerpts are from "Exhibit G1":

In addition, the massive cost of cleaning up the Florida sites as high as \$11 billion, or nine times EPA's annual Superfund budget could also serve as a lightning rod in the debate over the Superfund program's finances, where activists and congressional Democrats are pushing to reinstate the expired Superfund tax on industry and establish stricter financial assurance rules requiring companies to prove they can afford to clean up environmental contamination.

To date, more than 10 square miles of potentially contaminated former phosphate mining lands near Lakeland, FL, have been developed for residential use, sources say. According to EPA's Web site, the agency is evaluating 23 former phosphate mining sites as part of its "Florida Phosphate Initiative," although one EPA source says 23 is "probably an understatement" and that the real number is closer to 28.

The agency's Superfund database lists numerous former mining sites in the Lakeland area, and according to the EPA source, some of the phosphate sites include the former Tenoric Mine operated by the Borden Chemical Company and other former phosphate sites operated by the Agrico Chemical Company and the Mobil Chemical Company. The corporate successors to Borden, Agrico and Mobil declined to comment.

"Exhibit H," attached hereto, includes examples of Material Safety Data Sheets ("MSDS") and Certificate of Analysis ("COA") for fluoridation chemicals originating from phosphate mine waste produced in the Florida, but transported and disposed of in municipal water in other states. Specifically,

¹ "Exhibits F4-F6" are documents verifying that during the same time period CH2M Hill was the contractor to the Corps for the AEIS, CH2M Hill committed fraud during work performed under contract for other federal agencies. "Exhibit F4" describes a \$1.5 million settlement and criminal charges in September 2011 with US Department of Justice regarding false claims and kickbacks relating to a federal contract to manage mixed radioactive waste at a nuclear site in south-central Washington state. "Exhibit F5" states that CH2M Hill will pay \$18.5 million to resolve a US Department of Justice investigation into fraud at the Hanford Nuclear Facility. "Exhibit F6" states that CH2M Hill admits to the fraud committed at the US Department of Energy's Hanford Nuclear Facility and will pay \$18.5 million. Documents provided in "Exhibits F2-F6" were obtained from the following links:

http://www.ch2m.com/corporate/services/engineer_procure_construct_and_design-build/assets/ProjectPortfolio/Cedar.pdf

<http://www.ncppp.org/resources/case-studies/waterwastewater-infrastructure/ch2m-hill-seattle-cedar-water-treatment-facility/>

http://seattletimes.com/html/localnews/2016289655_apcoch2mhillsettlement.html

<http://www.bizjournals.com/seattle/news/2013/03/06/ch2m-hill-to-pay-settlement-in-hanford.html>

http://www.bizjournals.com/seattle/morning_call/2013/03/ch2m-hill-units-admit-to-fraud-at.html

Exhibits H1-H4 include documents for phosphate mine waste disposed of in municipal water in Athens-Clarke County, Georgia ("GA"); Nashville, Tennessee ("TN"); Port Angeles, Washington and Seattle, Washington ("WA"), respectively. Seattle Public Utilities ("SPU"), in King County, is the largest water district in that state that uses phosphate mine waste for fluoridation of municipal water. Approximately 1.5 million residents are exposed to that water. Seattle and its wholesale customers alone provide water to about 78% of the population of King County as well as 43,000 people in the southwest corner of Snohomish County.

The MSDS obtained from the Athens-Clarke County municipal water office verifies that phosphate mine waste produced by Mosaic is disposed of in that municipal water supply ("Exhibit H1"). The MSDS for the fluoridation chemicals by the Nashville municipal water office indicates those chemicals are obtained from KC Industries, LLC in Mulberry, Florida, which is within the CFPD ("Exhibit H2"). The COA for the Port Angeles order of hydrofluorosilicic acid was from J. R. Simplot ("Exhibit H3"). That company is a supplier of agricultural and food supplies and chemicals for farms and industrial applications (see: <http://www.simplot.com/>). That company apparently provided the COA for the fluorosilicic acid from BHS Specialty Chemicals, which manufactures and supplies industrial chemicals (including water fluoridation chemicals) for business through its suppliers in Jacksonville, Florida (see: <http://www.bhsmarketing.com/>). That order was transported across the country in liquid form, presumably by rail to the vicinity of Port Angeles then, delivered to Port Angeles by tanker truck. The only corporation consistently providing phosphates and wet hydrofluorosilicic acid at 23 percent slurry is Mosaic out of the CFPD. The COA for Port Angeles shows a high level of lead in this fluoridation chemical, at 3.7 ppm. The MSDS dated January 2010 obtained this month from the Seattle municipal water office as the current MSDS verifies that the fluoridation chemicals used by Seattle Public Utilities ("SPU") also were obtained from J. R. Simplot Company.

"Exhibit H" also includes a map of the US states (AR, CA, CT, GA, IL, KY, LA, MN, NE, NV, OH, RI, SD), Puerto Rico, Washington, DC that require fluoridation of all municipal water ("Exhibit H5" in red). The MSDS documents in "Exhibit H" from TN and WA illustrate that fluoridation also occurs in municipalities that are not located in states where fluoridation is mandatory. Neither the Final AEIS nor the revised Final AEIS considered the adverse impacts of phosphate mine waste from Florida phosphate mines that is disposed of in municipal water within or beyond the boundaries of the CFPD.

Adverse human impacts from phosphate mine waste disposed of in municipal water for fluoridation represent the greatest danger to infants, the elderly, people with debilitated kidneys, people with multiple chemical sensitivities ("MCS"), low income populations and at least some people with autism. Examples of adverse human impacts from phosphate mine waste discharged into municipal water for fluoridation include reduced IQ in infants, malfunctioning thyroid, migraines and chronic headaches, arthritic pain, dental and skeletal fluorosis, brittle bones, gastrointestinal pain and itchy rashes from consuming that contaminated water or products made with that contaminated water or from transdermal exposure to that contaminated water. Transdermal exposure occurs from bathing, showering or swimming in municipal pools filled with that contaminated water because those contaminants are absorbed through the skin. Similar contaminated municipal water also has been attributed to an increase in the number of fractures in the legs of racehorses, leading to an increase in the death of these horses.

The areas and pathways of contamination with phosphate mine waste are increased when that mine waste is disposed of in municipal water as fluoridation. Examples include:

1. discharge of treated municipal wastewater, contaminated with residual mine waste, into surface waters and ground waters that flow beyond the municipal water service area;
2. land application of municipal sewage sludge, contaminated with residual mine waste, within or beyond the municipal water service area;
3. the sale or free distribution of products made with municipal sewage sludge, contaminated with residual mine waste, to areas within or beyond the municipal water service area;
4. airborne distribution of particulates from open-air composting of municipal sewage sludge, contaminated with residual mine waste;
5. fluoridated municipal water taken on by water craft, including ferries, then transported and discharged at locations beyond the municipal water service area;
6. food packed in ice made from fluoridated water, whether or not that food is shipped to a location beyond the municipal water service area;
7. beverages made with fluoridated water and sold or shipped to locations beyond the municipal water service area; and
8. contamination of vegetables grown in gardens irrigated with municipal water and transported beyond the municipal water service area.

Adverse environmental impacts also occur from municipal water using phosphate mine waste for fluoridation. Examples include surface waters that should be fishable and swimmable, but are contaminated with phosphate mine waste from pathways 1 through 5, above. These and other pathways also result in the unpermitted taking of federally endangered and threatened species.

NATIONAL ENVIRONMENTAL POLICY ACT

The purpose of the National Environmental Policy Act is set forth in 42 U.S.C. § 4331:

- (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.
- (b) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may:
 - (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
 - (2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
 - (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

- (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
- (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment. (Emphasis added).

ENDANGERED SPECIES ACT

The ESA, 16 U.S.C. 460, *et seq.* provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the U.S. or elsewhere. Enacting the ESA, Congress declared that "the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of ...wildlife ... facing extinction." 16 U.S.C. § 1531(a)(4). One of the stated purposes of the Act is "to provide a program for the conservation of ...endangered species and threatened species." *Id.* § 1531(b). The ESA defines an "endangered species" as "any species which is in danger of extinction." *Id.* § 1532(6). A "threatened species" is one that is likely to become endangered within the foreseeable future. *Id.* § 1532(20). Section 9 of the ESA prohibits the "taking" of any endangered species. *Id.* § 1538(a). The Act defines the term "take" very broadly to include "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Id.* § 1532(19). The term "harass" is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." 50 C.F.R. § 17.3. The term "harm" is defined as "an act which actually kills or injures wildlife, [which] ... may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." *Id.*

CLEAN WATER ACT

The Clean Water Act (CWA) 33 U.S.C. §1251, *et seq.* (1972) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry and others. The CWA makes it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit is obtained. EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

SAFE DRINKING WATER ACT

The purpose of the SWDA, 42 U.S.C. §§ 300f, *et seq.*, is to "assure that water supply systems serving the public meet minimum national standards for protection of public health." Safe Drinking Water Act, Legislative History, H.R. Rep. No. 93-1185 (1974), reprinted at 1974 U.S.C.C.A.N. 6454. The Act thus authorizes the EPA to: establish federal standards applicable [to public water supplies] for protection from harmful contaminants, and establish a joint federal-state system for assuring compliance with these standards and for protecting underground sources of drinking water." *Id.* at 6454-55.

CLEAN AIR ACT

The Clean Air Act (CAA) 42 U.S.C. §7401, *et seq.* (1970), is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants. Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants. The 1990 Clean Air Act Amendments revised Section 112 to first require issuance of technology-based standards for major sources and certain area sources. "Major sources" are defined as a stationary source or group of stationary sources that emit or have the potential to emit 10 tons per year or more of a hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants.

By failing to take a hard look in the Final AEIS and revised Final AEIS at the adverse impacts described above, the referenced agencies have ignored the direct, indirect, secondary and cumulative adverse impacts of its actions on the human environment, federally endangered and threatened species and public drinking water supplies. The actions referenced above will result in unacceptable environmental degradation to air and water, the taking of federally endangered and threatened species and the destruction of regional habitat needed for feeding, reproduction, and shelter. The above-mentioned citizens and organizations request that, before the issuance of federal permits for the four phosphate mines proposed in the AEIS and any additional federal permits for phosphate mining within the region of the Floridan aquifer system, that a supplemental AEIS be completed to address all of the deficiencies described above. The above-mentioned citizens and organizations also request that the supplemental AEIS be conducted without the involvement of CH2M Hill. Additionally, the above-mentioned citizens and organizations request that federal authorization be suspended for the municipalities referenced above to discharge wastewater, land-apply municipal sludge and sell or distribute products made with municipal sewage sludge unless or until the USEPA completes an EIS addressing all of the direct, indirect, secondary and cumulative impacts of using phosphate mine waste for fluoridation of municipal waters or those municipalities cease using phosphate mine waste for fluoridation of municipal waters.

To the extent necessary, this correspondence shall constitute notice of our clients' intent to sue under the referenced federal Acts for violations of those Acts with respect to all impacts and aspects of this project. If you have any questions, please contact me. Thank you.

Very truly yours,



DAVID P. REINER, II, ESQ.

Attachments:

- A. Examples of Comments Regarding Adverse Impacts from Proposed Phosphate Mining
 - 1. 4/22/11 comments by Nora Demers, Ph. D. (without attachments)
 - 2. 4/25/11 comments by Ecology Party of Florida (without attachments)
 - 3. 7/27/12 comments by Winchester Environmental Associates, Inc.
 - 4. 7/31/12 comments by USGS comment letter
 - 5. 3/25/13 comments by Norma Killebrew
 - 6. 5/22/13 comments by Sarasota County
 - 7. 5/31/13 comments by Richard Weisskoff, Economics Professor (without attachments)
 - 8. 6/3/13 comments by Ecology Party of Florida (without attachments)
- B. Lead Agency and Contact Person for AEIS
- C. 3/18/13 60-Day Notice
- D. AEIS Scope Area in CFPD
- E. Piney Point Phosphate Fertilizer Contamination Documents
 - 1. 6/22/11 Summary of Piney Point Adverse Impacts from Fertilizers from 1966-2011
 - 2. 5/11/14 Proposed Deep Well Injection of Piney Point Phosphate Fertilizer Mine Waste
- F. Evidence of Conflict of Interest with AEIS Contractor CH2M Hill
 - 1. 8/2/12 contract for Manatee County to pay CH2M Hill \$162,315
 - 2. CH2M Hill Hired by Seattle Public Utilities to Design-Build-Operate Cedar Treatment Facility
 - 3. 2006 CH2M Hill Seattle Cedar Water Treatment treated with Fluoride and \$200 million filtration
 - 4. 9/22/11 CH2M Hill to Pay \$1.5 million in Settlement with US
 - 5. 3/6/13 CH2M Hill Will Pay \$18.5 Million to Resolve US Department of Justice investigation into Fraud at the Hanford Nuclear Facility
 - 6. 3/8/13 CH2M Hill admits to fraud committed at the US Department of Energy's Hanford Nuclear Facility and will pay \$18.5 million
- G. Radiation Exposure
 - 1. 1/21/10 Example of Massive Florida Radiation Exposure from Phosphate Mining
 - 2. Water quality data showing high levels of radiation in a well on private property adjacent to phosphate mining in the CFPD
- H. Fluoridation Mine Waste Documents
 - 1. Athens-Clarke County, GA Fluoridation MSDS from Mosaic
 - 2. Nashville, TN Fluoridation MSDS from KC Industries, LLC
 - 3. Port Angeles, WA Fluoridation COA from Simplot Phosphates, LLC (aka J.R. Simplot)
 - 4. Seattle, WA Fluoridation MSDS from J.R. Simplot
 - 5. Map of States with Mandatory Fluoridation Laws

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COMPENSATORY MITIGATION PLAN

**MOSAIC FERTILIZER, LLC
SOUTH PASTURE EXTENSION
HARDEE COUNTY, FLORIDA**



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July 2016



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Attachments

Attachment A	Mitigation Work Plan Part 1: Reclamation Plan Part 2: Stream Restoration Plan Part 3: Mitigation Categories
Attachment B	Demonstration of Successful Land Reclamation and Habitat Enhancement (enclosed CD)
Attachment C	Conservation Easement Template - SWERP Form 62-330.301(13)
Attachment D	Long-Term Management Plan
Attachment E	UMAM Datasheets (electronic copy)
Attachment F	Wetlands/Stream Reference Plan (enclosed CD)
Attachment G	2014 Mosaic Title of South Pasture Extension (enclosed CD)
Attachment H	Financial Assurance Documents
Attachment I	Temporal Lag Factor References

Record documents referenced in the Mitigation Plan:

- September 2011 USACE Application Environmental Narrative; Submitted on September 16, 2011
- Wildlife Habitat Management Plan; Submitted on September 16, 2011
- Stormwater Pollution Prevention Plan; Submitted on March 22, 2011
- Best Management Practices/Pollution Prevention Plan; Submitted on September 26, 2013



INTRODUCTION

Mosaic Fertilizer LLC (Mosaic) owns and operates phosphate mining and beneficiation facilities located on approximately 15,000 acres in northwest Hardee County, Florida. The existing mining and beneficiation facilities located south of State Road 62 are referred to as the South Pasture Mine (SP).

Mosaic is currently seeking approvals to extend mining operations from the South Pasture onto approximately 7,513 acres of adjoining land known as the South Pasture Extension (SPE) to ensure a long-term supply of phosphate rock to meet the fertilizer demand of Mosaic's customers. The SPE is located in Sections 1, 2, 3, 10, 11, and 12, Township 34 South, Range 23 East, as well as Sections 2, 3, 4, 5, 6, 7, 8, and 10, Township 34 South, Range 24 East in Hardee County, Florida. More specifically, the SPE is located south of State Road 62, and north of State Road 64, and it is divided by County Road 663. These mineable phosphate ore reserves include ore lying beneath and adjacent to 1,768.2 acres of waters of the United States. As proposed, the mining of the SPE will result in approximately 1,198.2 acres of impacts to wetlands and 32,161 linear feet of impacts to natural and ditched streams.

This document is being provided to serve as a complete Compensatory Mitigation Plan (CMP) to address the United States Army Corps of Engineers (USACE) mitigation requirements in accordance with the 2008 Compensatory Mitigation Rule (33 CFR Part 332), consistent with 33 CFR 332.4 (c). All mitigation will be completed according to the Mitigation Work Plan (Attachment A) required by 33 CFR 332.4 (c)(7), which consists of the following two parts:

- Part 1 – USACE Reclamation Plan - Wetlands (USACE Reclamation Plan); and
- Part 2 - South Pasture Extension Stream Restoration Plan (Stream Restoration Plan);

In addition to the Final Areawide Environmental Impact Statement on Phosphate Mining in the Central Florida Phosphate District (AEIS), this plan relies heavily on and incorporates information previously submitted as a part of the September 2011 SPE USACE Application and the response to the June 2013 and March 2014 Request for Additional Information, including the following reports:

- September 2011 USACE Application Environmental Narrative;
- Integrated Simulations for the South Pasture Extension Mine For Pre-Mining and Post-Reclamation Conditions;



-
- Wildlife Habitat Management Plan (as revised for the USACE, this document is now the LTMP);
 - Stormwater Pollution Prevention Plan; and
 - Best Management Practices/Pollution Prevention Plan.

The mitigation plans presented herein have been designed to meet federal criteria for permit issuance contained in 33 CFR 332.4 (c).

COMPENSATORY MITIGATION PLAN

Objective - A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address watershed needs. 33 CFR §332.4(c)(2)

Mosaic acknowledges the USACE considers mitigation options pursuant to its 2008 Compensatory Mitigation Rule. This rule establishes a hierarchy of preference for the three compensatory mitigation mechanisms, with mitigation banks the most preferred mechanism, followed by in-lieu fee programs, then permittee-responsible mitigation as outlined in 33 CFR 332.3 (b). The Rule also allows the USACE to determine what constitutes the most appropriate and practicable compensatory mitigation based on consideration of project-specific circumstances, such as the availability of mitigation banks or in-lieu fee programs, and the watershed approach. The following discussion clarifies that permittee-responsible mitigation conducted on-site and in-kind through a watershed approach is the most appropriate and practicable mitigation mechanism, as it is the most likely to successfully replace the functions and services temporarily lost due to mining, given the scale, location, and design of the proposed mitigation.

First, mitigation banks are not an appropriate and practicable mitigation method for the SPE compensatory mitigation. As noted in Chapter 5 of the AEIS, there is a lack of sufficient mitigation bank credits to serve the phosphate industry and it is unlikely that future commercial mitigation banks would be developed and be available to meet the demand of mitigation needs of currently proposed or future mines. Second, as is noted in Chapter 5 of the AEIS the USACE has not issued any permits for in-lieu fee programs within the Central Florida Phosphate District or the Peace River watershed. Therefore, in-lieu fee mitigation is not available or practicable. Third, Mosaic is required by state law to restore mined wetlands and streams on site on an acre-for-acre, type-for-type, foot-for-foot basis, a considerable expense that cannot be avoided by purchasing mitigation bank credits. See Fla. State. § 378.207(1); § 373.414(6)(b) (2013). The use of mitigation banks for large phosphate mine mitigation is therefore not appropriate or practicable. Accordingly, permittee-responsible mitigation, is the most practicable option for Mosaic. A sufficient amount of Permittee-responsible off-site mitigation is not



available to completely fulfill Mosaic's compensatory mitigation requirements, because of the lack of viable offsite mitigation alternatives and the fact that on-site wetland restoration is already mandated.

The proposed compensatory mitigation on the SP and SPE site meets the hierarchy of preference expressed in the Compensatory Mitigation Rule because it constitutes permittee-responsible mitigation under a watershed approach, as that concept is expressed in the Rule. As noted in the AEIS, federal compensatory wetland mitigation for phosphate mines is typically completed on-site and in-kind, within the mine boundary, and is designed and implemented to improve or create habitat connectivity and healthy watersheds on a regional scale. Mitigation plans, which are supported by considerable data, modeling and analysis, generally include a combination of mitigation approaches, including creation, restoration, enhancement and preservation designed to create/restore high quality wetland systems and enhance or preserve existing disturbed systems to provide the greatest benefit to the local and regional watershed. Mitigation as conducted by the phosphate industry using currently-accepted mitigation techniques and practices has been demonstrated to be successful and sustainable and uses the principles of a watershed approach outlined in 33 CFR §332.3(c).

The SPE Compensatory Mitigation Plan has been designed to maintain and improve the quality and quantity of aquatic resources within the Peace River Watershed. The Plan addresses specifically-identified needs such as those stated in the Charlotte Harbor National Estuary Program (CHNEP) Comprehensive Conservation and Management Plan (CCMP). The CCMP constitutes a watershed plan pursuant to 33 CFR § 332.3(c). The CHNEP adopted the current version of the CCMP (2013), with its stated goal of arresting and reversing the declines of watersheds that drain into Charlotte Harbor, as well as the Charlotte Harbor estuary. In the CCMP, four "Priority Problems" are identified, as well as fifteen short-term programs "Objectives" and 76 "Priority Actions" which were established by CHEP to address the Priority Problems. As stated in the CCMP, the identified Priority Problems are listed below:

- 1) Water Quality degradation: Pollution from agricultural and urban runoff, point-source discharges, septic systems and wastewater treatment systems, atmospheric deposition, groundwater, and other sources;
- 2) Hydrologic alterations: Adverse changes to amounts, locations, and timing of freshwater flows, the hydrologic function of floodplain systems and natural river flows;
- 3) Fish and wildlife habitat loss: Degradation and elimination of headwater streams and other habitats, conversion of natural shorelines caused by development, cumulative impacts of docks and boats, invasion of exotic species and cumulative and future impacts; and



- 4) Stewardship gaps: Limitations in people's knowledge of choices and management decisions that will lead to sustainability within their community. These gaps include overarching issues such as public outreach, advocacy, and data management.

When coupled with the onsite preservation plan elements, the onsite, in-kind wetland re-establishment plan elements are consistent with 33 CFR 332.3 and the watershed needs identified in the CCMP because:

- The SPE Mitigation Plan is significant enough to result in watershed scale benefits from the work;
- The re-establishment plan elements would reduce non-point source pollutants associated with stormwater runoff (CHNEP Priority Action WQ-D);
- The re-establishment plan elements would improve and protect water quality to offset other anthropogenic impacts (CHNEP Priority Action WQ-E);
- The re-establishment plan elements would establish and maintain a more natural seasonal variation in freshwater flows by eliminating ditches and reducing peak runoff rates (CHNEP Priority Action HA-E);
- The re-establishment plan elements would restore and protect freshwater wetlands on at least an acre-for-acre basis (CHNEP Priority Action FW-C);
- The re-establishment plan elements would restore and protect aquatic and terrestrial native habitat (CHNEP Priority Action FW-F); and
- The re-establishment plan elements would increase the acreage of land protected under conservation easements (CHNEP Priority Action FW-H).

Mosaic has designed the onsite and offsite mitigation to achieve regional ecological benefits at the watershed level, creating integrated, interconnected landscape post reclamation. To address USACE mitigation requirements, including specifically-identified watershed plans such as the CCMP, Mosaic has designed a comprehensive post-mining landscape that includes combinations of preserved, enhanced, and reclaimed stream corridors, wetlands, and their adjacent uplands, which are linked geographically and hydrologically to the even larger upland and wetland habitat networks formed by regional stream networks such as Payne Creek and Horse Creek, which are major tributaries to the Peace River. This approach is consistent with the Integrated Habitat Network (IHN) and the CHNEP CCMP objectives for the Peace River watershed by addressing water quality degradation, hydrologic alterations, and fish and wildlife habitat loss Priority Problems that the SPE mitigation plan, if implemented as proposed, can help achieve.

As designed, mitigation for the 1,198.2 acres of wetland impacts is proposed in the form of 123.5 acres of wetland enhancement and 396 acres of wetland preservation prior to mining, together with 1259.58 acres of onsite herbaceous and forested wetland restoration and 44.7 offsite forested wetland restoration (Table 1, Figure 1), which will occur on a rolling basis across the site, as restoration follows behind mining.



In addition, to mitigate for the 32,161 linear feet of stream impacts, the project will include the creation of 18,402 linear feet of streams, also on a rolling basis, and preservation of 55,501 linear feet of stream prior to mining (Table 2). This plan also demonstrates that the wetland functions currently being provided by the on-site wetlands will be fully restored as measured by the Uniform Mitigation Assessment Methodology (UMAM) analysis (Tables 1, 7, 8, 9, and; and the stream function will be fully restored, as measured by the FDEP Habitat Assessment (Tables 2 and 4A, 4B, 4C). The proposed restoration plan demonstrates that greater than acre-for-acre and type-for-type wetland restoration will be achieved (Attachment A, Part 1), with more wetland acreage and linear footage of streams occurring onsite than currently exists today (Attachment A, Part 2), resulting in a net increase in wetland acreage consistent with national goal of "no net loss" of wetland acreage or function. Mosaic's reclamation plans restore and enhance to the maximum extent practicable the pre-mining drainage basins.



Table 1. Summary of SPE Functional Assessment

Table 1 Summary of SPE Wetland Functional UAMAM Assessment			
	Acreage	Debits	Credits
Mining Impacts*			
Forested	420.67	204.95	
Herbaceous	777.50	315.22	
Total:	1198.17	520.17	
On-site Wetland Establishment**			
Forested	524.60		139.33
Herbaceous	734.98		278.07
Total:	1259.58		417.40
On-Site Wetland Preservation***			
Forested	329.13		48.70
Herbaceous	67.10		10.62
Total:	396.23		59.31
On-Site Wetland Enhancement****			
Forested	20.61		4.03
Herbaceous	102.91		26.58
Total:	123.52		30.61
Forested Credit Balance On-site:			-12.90
Herbaceous Credit Balance On-site:			0.05
Total Credit Balance On-site:			-12.85
Off-Site Wetland Establishment**			
Forested	44.70		13.50
Herbaceous	0.00		0.00
Total:	44.70		13.50
Total Credit Balance Off-site:			13.50
USACE Mitigation Summary			
Forested Credit Balance:			0.60
Herbaceous Credit Balance:			0.05
Total Credit Balance On-site + Off-site:			0.65

*See CMP Table 7

**See CMP Table 8

***See CMP Table 9

****See CMP Table 10



Table 2. Stream Flow and Mitigation Type Summary

Table 2 Summary of SPE Stream Functional Assessment							
	Ephemeral	Intermittent	Natural Streams (511)	Ditched Streams (512)	Length Total	Debits***	Credits****
Mining Impacts							
Linear Feet	30616	1545*	21342	10819	32161	13361.14	
Mile	5.8	0.3*	4	2	6.1		
Total:	30616	1545	21342	10819	32161	13361.14	
On-site Stream Establishment							
Linear Feet	17833	569	18402	0	18402		4437.46
Mile	3.4	0.1	3.5	0	3.5		
Total:	17833	569	18402	0	18402		4437.46
On-Site Stream Preservation**							
Linear Feet	21897	33604	53516	1005	55501		9003.16
Mile	4.1	6.4	10.1	0.2	10.5		
Total:	21897	33604	53516	1005	55501		9003.16
Total On-site Mitigation:	39730	34173	71918	1005	73903		13440.6
Total Credit Balance On-site:							79.48

This table only reflects USACE Stream Mitigation, for the complete SPE Stream Restoration Plan, See Attachment A Part 2

"Stream" includes unditched and ditched natural streams. See Table SRO-2 for breakdown.

*Entire length of intermittent stream in the proposed mining area is ditched.

**Includes 520 LF of stream that will be temporarily disturbed by mining infrastructure corridors and subsequently rebuilt to natural conditions. This length is intermittent.

***Based on the HA Functional Analysis (Tables 4A)

****Based on the HA Functional Analysis (Tables 4B and 4C)



Site Selection - A description of the factors considered during the site selection process. This should include consideration of watershed needs, onsite alternatives where applicable, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site. 33 CFR §332.4(c)(3)

A majority of proposed wetland enhancement and wetland and stream creation will be conducted on the SPE (on-site), while some forested wetland creation will be provided on the Mosaic-owned South Pasture Mine, which abuts the SPE to the north (off-site).

On-site Mitigation acreage consists of:

Type	Acres
Enhancement	123.5
Restoration/Creation	1,259.6
Wetland Preservation	396.0

Off-site wetland mitigation acreage consists of:

Type	Acres
Forested Wetland Establishment	44.7

The SPE on-site areas were chosen for the permittee-responsible, on-site, in-kind mitigation under the watershed approach, for the reasons described above. Factors considered in selecting the SPE sites are the following: (1) the off-site alternatives analysis that demonstrated SPE is the least environmentally damaging practicable alternative as the impact site; (2) the state requirement to conduct acre-for-acre, type-for-type wetland and stream restoration on-site; (3) the lack of availability of sufficient mitigation bank credits or in-lieu fee programs to accomplish the necessary mitigation; and (4) the lack of available mitigation in the South Pasture that wasn't already accounted for as mitigation to offset other approved impacts in the South Pasture Mine. As set forth above, these factors properly apply the hierarchy set forth in the Compensatory Mitigation Rule. These factors led to the selection of the SPE as the site for the majority of the proposed mitigation. The specific location and design of the post-reclamation landscape was based on extensive monitoring, data collection, and analyses demonstrating that the chosen locations would support the planned mitigation, and that the mitigation would be successful and self-sustaining.

The specific off-site creation areas were selected to maintain the balance of forested wetland impacts and mitigation credits associated with the SPE. The off-site wetlands



will be held to ALL performance standards and conditions associated with the SPE 404 permit and will be included in the mitigation financial assurance. These off-site wetlands and their 120 foot buffer will be protected in perpetuity after achieving performance standards, and covered with LTMP monitoring and long term financial assurance in order to maintain the purpose of the mitigation. The design of the SPE Reclamation Plan (Mitigation Work Plan, Part 1) includes extensive modeling of pre and post-mining hydrology and topography that will be described below (which included the proposed offsite wetlands) to ensure that the reclaimed systems will function as designed, and that drainage basins will function similar to pre-mining basins to maintain or improve pre-mining watershed flow regimes. Results of the integrated modeling indicate that the proposed mitigation takes into account watershed needs and will result in ecologically self-sustaining mitigation. The wetlands will be constructed as described in the Mitigation Work Plan using Muck/Topsoil, planted with desirable tree and understory species, and held to the same 5% nuisance exotic standard as onsite establishment wetlands.

ST-IS-R24-F will be a 16.87 acre forested wetland in the Shirttail Branch restoration area in the South Pasture Mine. The wetland is already incorporated into the FDEP WRP 252607909 mitigation plan and is modeled to be connected to an ACOE herbaceous wetland. This system was conservatively scored for LLS a 5, mainly because the surrounding restoration area (outside of the 120 ft. buffer) will not be protected by a restricted covenant. Although the wetland will be modeled post mining and prior to planting for correct hydrology annually, it was also scored conservatively at a 5 for the WE score for similar reason as LLS. A CS score of 7 (the typical target) was assigned considering that this wetland will be constructed as described in the Mitigation Work Plan using Muck/Topsoil, planted with desirable tree and understory species, and held to the same 5% nuisance exotic standard as onsite establishment wetlands. Risk is scored at a moderate 1.50 to incorporate risk elements associated with Hydrologic Vulnerability, Vegetative Vulnerability, and Invasive Species Vulnerability (See Table 12 below).

DB-IS-R59 will be a 27.83 acre forested wetland in the Doe Branch restoration area in the South Pasture Mine. The wetland is already incorporated into the FDEP WRP 252607909 mitigation plan and is modeled to be connected to an ACOE herbaceous wetland. This system was scored as a 7 for LLS due to the fact that the surrounding restoration complex will be incorporated into a Declaration of Restrictions (as indicated in CMP Figure 2), limiting the amount of non-regulated activities that can occur adjacent to the wetland. The WE was assigned a score of 6 to account for the fact that the wetland will be modeled post-mining and prior to planting and monitored for correct hydroperiod annually, without any potential adjacent non-regulated influences, and a CS of 7 was assigned given that it will be constructed as described in the Mitigation Work Plan using Muck/Topsoil, planted with desirable tree and understory species, and held to the same 5% nuisance exotic standard as onsite establishment wetlands. Risk is scored at a moderate 1.50 to incorporate risk elements associated with Hydrologic Vulnerability, Vegetative Vulnerability, and Invasive Species Vulnerability (See Table 12 below).



The design of the SPE Reclamation Plan (Mitigation Work Plan, Part 1) includes extensive modeling of pre and post-mining hydrology and topography to ensure that the reclaimed systems will function as designed and that drainage basins will function similar to pre-mining basins to maintain or improve pre-mining watershed flow regimes. As detailed in the report "Integrated Simulations for the South Pasture Extension Mine for Pre-Mining and Post-Reclamation Conditions" (AMEC-BCI 2011), which is part of the USACE Application Record, post-reclamation surface water and groundwater hydrology were evaluated in detail using the MIKE SHE / MIKE-11 integrated groundwater / surface water modeling platform. Results of the integrated modeling indicate that the proposed mitigation takes into account watershed needs and will result in ecologically self-sustaining mitigation. As a result of changes in post-mining topography, streamflow within the reclaimed landscape will differ somewhat from pre-mining streamflow. The changes are expected to be largely beneficial to the watershed environment, with some reductions in streamflow during the wettest periods caused by increases in evapotranspiration and onsite wetland storage, and significant increases in the timing, magnitude, and duration of low flows. These changes can largely be attributed to the fact that much of the existing site has been ditched for agricultural uses causing water to leave the SPE landscape unnaturally quickly compared to historic conditions. These ditches will not be present in the reclaimed landscape, resulting in lands that will be somewhat wetter overall, with higher evapotranspiration rates and correspondingly lower wet season streamflows as a result of the establishment of a more natural watershed storage and flow regime. The proposed plan will also result in the increased duration of low flows with the creation of conveyance network that more closely mimic the natural wetland slough systems, which existed prior to the agricultural alterations of the SPE.

Mosaic has a strong history of consistently improving wetland and stream habitat creation and enhancement efforts beginning in the late 1970s and continuing today. Mosaic employs proven modern, innovative scientific and technical methods encompassing planning, ecological and engineering design, modeling, construction, maintenance and monitoring. Data in the DA Application and AEIS Record demonstrate that Mosaic can accomplish the goals of the SPE Compensatory Mitigation Plan. For example, the average SPE UMAM score for the post-reclamation forested wetlands (Florida Land Use Cover Forms Classification System (FLUCFCS) Code 617 wetlands is 0.69. Comparable restored wetlands on the South Pasture Mine achieved similar scores in less than 15 years as documented in the report, "Demonstration of Successful Land Reclamation and Habitat Enhancement," included here as Attachment B. While this dataset is not extensive, it is all accomplished by a single entity (Mosaic) in the same geographic region over decades; accordingly, Mosaic believes it is reasonable and appropriate to conclude that the reclamation on the SPE will equal or exceed those efforts accomplished to date on the SP, especially given continued innovations in reclamation technology and Mosaic's long-term experience with and understanding of the specific regional and SPE site hydrologic conditions. Accomplishing ecologically self-sustaining mitigation as proposed on-site is demonstrably practicable, based on the data and information contained in both the USACE Application Record and the AEIS Record. The SPE site is the appropriate location for the majority of the proposed



compensatory mitigation, as the foregoing discussion demonstrates.

Site Protection Instrument - A description of the legal arrangements and instrument including site ownership that will be used to ensure the long-term protection of the mitigation project site. 33 CFR §332.4(c)(4)

Mosaic is the fee simple owner of the SPE.

Long-term protection of the mitigation areas will be provided in the form of perpetual Conservation Easements to the Florida Department of Environmental Protection (FDEP) and recorded in the public records of Hardee County. Conservation Easements are expressly authorized under Florida law (Section 704.06, Florida Statutes), and provide the long term protection required by the 2008 Compensatory Mitigation Rule 33C.F.R. § 332.7(a). A copy of the perpetual Conservation Easement form to be used, which provides third party beneficiary rights to the USACE, is attached as (Attachment C).

There are two levels of long-term protection (Immediate Level I and Post-Reclamation Level I) proposed for the SPE. The total land area to be put into permanent conservation upon completion of reclamation is 3,300 acres; consisting of 1,095 acres (both wetlands and uplands) preservation, and 2,205 acres of wetland creation and associated buffer. The location of the protection levels are shown on Figure 2. A summary of the acreage breakdown and both the restricted and allowable activities for each protection level is outlined in Long Term Management Plan Table LTMP-1 (Attachment D). In all cases, however, the Conservation Easements will recite the purpose of the easement to retain the mitigation areas in the preserved, enhanced, restored, or created condition required by the permit and will prohibit any activity or use of the Protected Property in a manner that is inconsistent with the purpose of the easement or the purpose of the wetlands as compensatory mitigation.

Consistent with 33 CFR 332.7, the proposed Conservation Easement would include the following requirements, rights and obligations:

- Identifies the Corps of Engineers as the named third-party beneficiary to enforce the terms of the Conservation Easement (Paragraphs 5 and 9);
- Prohibits incompatible land uses that might jeopardize the objectives of the compensatory mitigation project (Paragraph 3);
- Establishes baseline conditions, maintenance practices and responsibilities to maintain the compensatory mitigation projects in the preserved, enhanced, restored, or created condition required by the Corps permit (Paragraphs 2 and 3), with specific maintenance and management practices specified in a written Management Plan attached and incorporated into the Conservation Easement (Exhibit C);
- Provides notice requirements and timing, including written notice to the Corps



of Engineers at least 60 days before any action is taken to amend, alter, release, or revoke the Conservation Easement (Paragraph 5); and
Require implementation of long term management procedures to remedy adverse unforeseen circumstances.

Baseline Information - A description of the ecological characteristics of the proposed mitigation project site, in the case of an application for a DA permit, the impact site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site. A prospective permittee planning to secure credits from an approved mitigation bank or in-lieu fee program only needs to provide baseline information about the impact site. 33 CFR §332.4(c)(2)

To aid in the development of a reclamation plan for the SPE, ecological baseline data collection was initiated in 2004. The data collection effort included wetland delineations, wetland quality assessments using UMAM, detailed vegetation and land use mapping, and wildlife and listed species surveys. A hydrologic assessment was also completed as a part of the MIKE SHE / MIKE-11 integrated groundwater / surface water modeling analysis. Data collected for water modeling analysis included SPE stream and drainage area characteristics, topography, precipitation rates, measurements of evapotranspiration, and hydrogeology as discussed in the report, "Integrated Simulations for the South Pasture Extension Mine for Pre-Mining and Post-Reclamation Conditions" (AMEC-BCI 2011), included as part of the USACE Application.

One important part of this ecological data collection was the establishment and documentation of forty vegetative transects across representative wetlands on the SPE to serve as a guide for the development of a wetland habitat and vegetative characterization. Transects began approximately 10 yards landward of the wetland line, traversed through the wetland and continued for approximately 10 yards beyond the wetland limit on the opposite side. Surveyed points were established wherever a change in vegetation or topography occurred and seasonal high elevations data were collected at various points along the transect. The vegetation between points was characterized in terms of species presence and relative abundance. The location of each transect on the SPE property is depicted in Figure RP-1 of the USACE Reclamation Plan (Attachment A, Mitigation Work Plan, Part 1), with representative cross-section and plan view drawings of this information. A summary of the existing and post reclamation SPE land use is provided in Table 3. For more comprehensive details regarding the existing site conditions on the SPE, please refer to Section 2 of the WHMP previously submitted as Appendix EN- 8 with the September 2011 SPE USACE Application.



Table 3. South Pasture Extension Existing and Post-Reclamation Land Use Summary

Table 3 South Pasture Extension Existing and Post-Reclamation Land Use Summary		
Land Use Type	Existing Acres	Post-Reclamation Acres
Non-Native Uplands (200-level , 700-level, 800-level land uses)	3548.9	3239.3
Native Uplands (300-level , 400-level land uses)	1978.9	2180.7
Open Waters/Wetlands* (500-level, 600-level land uses)	1985.0	2092.8
TOTAL		7512.8

*Total on-site acreage, regardless of Jurisdiction

The evaluation of the USACE wetland jurisdictional determination involved many factors and included the review of aerial photographs and relevant Geographic Information Systems (GIS) data, geological quad sheets, county soils maps, field visits, and site specific information assembled by Mosaic. The location of all wetlands on the SPE and their USACE jurisdictional status as determined through the evaluation process are presented on (Figures 3a and 3b). A letter providing formal verification of USACE wetland jurisdiction was issued on October 18, 2012 [SAJ-1993-01395(IP-ACR)].

The collected data was compiled and used to develop a post-mining landscape that mimics pre-mining conditions, including wetland hydrology and vegetative composition, and landscape topography as summarized in Table 3. The result of this data collection effort was the development of the Reclamation Plan and the Stream Restoration Plan, both of which detail the type and extent of wetland and stream systems to be created on the SPE.

Determination of Credits - A description of the number of credits to be provided including a brief explanation of the rationale for this determination. 33 CFR §332.4(c)(6)

- For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program, it should include the number and resource type of credits to be secured and how these were determined.



All mitigation will be conducted by Mosaic on Mosaic-owned property. No planned purchase of mitigation bank credits or participation in an in-lieu fee program is proposed, for the reasons detailed above.

- **For permittee-responsible mitigation, this should include an explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the permitted activity.**

AEIS Section 5.2 specifies the sufficiency of mitigation proposed by Mosaic must be evaluated separately for streams, herbaceous wetlands, and forested wetlands; account for and offset lost wetland functions due to temporal lag between the time wetland disturbances and the corresponding mitigation would occur, including consideration of advanced or concurrent mitigation; and assessed by applying either UMAM or other functional assessments to impact and mitigation sites. USACE's Regulatory Source Book provides additional guidance on calculating mitigation credits and the overall sufficiency of mitigation proposed, including a spreadsheet model for this purpose.

This SPE Mitigation Plan has been designed to more than offset temporal losses of aquatic resource functions caused by implementing Mosaic's SPE proposed actions and to maintain or improve the chemical, physical, and biological integrity of waters of the United States, including wetlands on and adjacent to the SPE Mine. The following determinations of sufficiency are based upon the baseline conditions described in the above section and the mitigation performance standards that are anticipated in the DA permit. Stream mitigation is addressed separately from wetland mitigation. The method used to calculate mitigation sufficiency is the spreadsheet model presented in the Jacksonville District's Regulatory Source Book and through direction provided by the USACE Mining Team. Consistent with the AEIS guidance, streams, herbaceous wetlands, and forested wetlands are accounted for separately. UMAM is the functional assessment applied to measure wetland mitigation sufficiency. FDEP's Habitat Assessment Procedure is the functional assessment method applied to measure stream mitigation sufficiency.

Wetland Mitigation Credits

The wetland functions currently being provided by the on-site wetlands to be impacted will be fully restored and replaced in the SP and SPE as measured by the Uniform Mitigation Assessment Method (UMAM) analysis, 62-345 F.A.C. As the Compensatory Mitigation Rule recognizes, "where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required." 33 CFR 332.3(f). The "appropriate functional assessment method" accepted for use by the USACE in calculating wetland functional loss/gain is UMAM.

For each Assessment Area (AA) affected by the impact or mitigation proposed, each function (Location/Landscape Support, Water Environment, and Community Structure) in the UMAM is evaluated. This produces a Δ for each of the AA when comparing with and without impact or mitigation scenarios. The Δ for each AA is then multiplied by "temporal loss" factors, Risk and PAF (if applicable) which results in each AA having a weighted Δ that has been corrected for the importance value and temporal lag. The products are then summed by function for all AA's to produce the final credit or debit total. The following Sections describe each of the independent variables listed above.

The assignment of scores for the UMAM assessment was based on extensive field evaluations of the existing site conditions, reviews of the reclamation plan by regulatory staff, assessment of planned post-reclamation conditions and habitat connectivity, habitat management, and long-term protection. The UMAM assessment also includes a calculation of temporal loss that takes into account the time it takes for the system to mature as well as the sequencing of reclamation following mining sequentially across the site. The wetland functions currently being provided by the on-site wetlands to be impacted will be fully restored and replaced as measured by the UMAM analysis. As detailed above in Table 1, the UMAM analysis demonstrates a functional loss of -520.17 units, with a total of 520.82 units of functional gain, leaving a surplus functional lift of 0.65 units, which will not be available for compensation associated with any other future impacts. Electronic copies of the wetland impact and mitigation UMAM datasheets are included on a CD with this submittal (Attachment E).

Wetland Time Lag

Time lag was considered as part of all mitigation types and was used in the final calculation of Functional Gain for all Assessment Areas (AAs).

The FAEIS Table 5-1 temporal loss worksheet does not directly apply to the SPE Mine impacts because the USACE worksheet assumes all impacts occur during the same year, whereas mitigation is completed (i.e., defined as totally successful) over a number of years. The SPE temporal loss calculations were modeled after the South Fort Meade- Hardee Extension Mine calculations, as directed by the USACE Jacksonville District. In the case of the SPE Mine, the impacts would occur in discrete mining blocks over approximately 15 years, as compared to one year.

In order to account for the temporal impacts, Mosaic's functional analysis treats the SPE Mine as one ecosystem whose existing aquatic resource functional values are assumed to continue to be provided until the year when mining disturbance would occur. At that time, if the wetland polygon is proposed to be directly or indirectly affected, the functional values are eliminated. Table 5 and Table 7 detail the temporal lag factors used in the functional loss analysis. Supporting tables are provided in Appendix I.



The same approach is used to account for the time lag associated with compensatory mitigation in the years following T0. As shown in Table 6, credit isn't achieved until the mitigation is constructed and met the target functional value. Tables 8H and 8F present temporal lag factors for each forested and herbaceous mitigation wetland. The mitigation lag factors are based upon Mosaic's 30-plus years of experience in constructing over 21,000 acres of wetlands following extraction of phosphate ore.

In forested wetlands, full mitigation is credited upon the fifteenth year after the completion of planting. At that time, the adjacent uplands would be eligible for release from Florida reclamation liability, such that the adjacent buffer would be provided. Similarly, within three years of the completion of physical work, the hydrology would be re-established and water quality standards would be met. Thus, full credit for these parameters begins then. Beginning in year built plus five, partial credit for wildlife utilization and overstory and groundcover vegetation would be granted. Groundcover is projected to be fully functioning in 10 years and canopy cover is projected to be fully functioning in 15 years. Wildlife utilization likewise follows the 15-year schedule. While groundcover would be established during the year built, the planting of shade tolerant target species beginning in year seven as the canopy begins to close is why 10 years are allowed; prior to canopy closure, the groundcover is not expected to be comprised of the shade tolerant species present in forested wetlands. For these reasons, the temporal lag factors assume the target functional capacity of the mitigation wetlands is reached 15 years following construction. These temporal lag factors are based upon the average UMAM functional values Mosaic is proposing to achieve, which are identified in Table 8F.

Herbaceous wetlands reach target functional capacities in much less time. As shown on Table 8H, Mosaic is allowing three years in the functional analysis.

Mosaic worked with the USACE Jacksonville District to develop temporal lag calculation approach to reflect the values shown on Tables 5 and 6. Tables 7 and 8 present the results of applying USACE guidance for re-establishment of forested and herbaceous wetlands, respectively.

Mitigation in the form of enhancement, along with the habitat types to be enhanced and the nature of the mining and reclamation process, was given the assignment of a three year time lag by the USACE Jacksonville District. Use of this t-factor is supported by Section 5 of the Final Areawide Environmental Impact Statement (FAEIS), which notes that phosphate mining occurs as a "rolling process" in which reclamation in some areas are reclaimed before other areas are impacted. Further, 62-345.600(1)(a) states that "there is no time lag if the mitigation fully offsets the anticipated impacts prior to or at the time of impact". As noted in Attachment A, Mitigation Work Plan, the enhancement activities will be completed prior to mining, and the vegetative and hydrologic enhancements proposed are anticipated to improve the conditions in



the enhanced wetlands within a very short time frame.

In summary, the temporal lag factors applied in the SPE Mine functional analysis apply the same approach, formulas and discount factors as the USACE Jacksonville District mitigation worksheets.

Determination of Wetland Mitigation Risk

Below is an overview of risk as outlined in 62-345.600(2) F.A.C., which was adopted by the USACE when they recommended that UMAM be used for federal wetland regulatory purposes starting August 1, 2005. This overview is then followed by a specific discussion of how each mitigation category was scored, and finally how each major habitat within the establishment mitigation category was scored.

Mitigation risk accounts for the degree of uncertainty that the proposed conditions will be achieved, resulting in a reduction in the ecological value of the mitigation assessment area. In general, mitigation projects which require longer periods of time to replace lost functions or to recover from potential perturbations will be considered to have higher risk than those which require shorter periods of time. Each assessment area is scored on a scale from 1 (for no or *de minimis* risk) to 3 (high risk), on quarter- point (0.25) increments. A score of one is typically applied to mitigation conducted in an ecologically viable landscape and deemed successful or clearly trending towards success prior to impacts, whereas a score of three would indicate an extremely low likelihood of success based on the ecological factors below (62-345.600(2) F.A.C.). This language supports the scoring of onsite preservation as a risk of one because this mitigation type already exists in an ecologically-viable landscape and the mitigation will already exist prior to impacts. This language also supports a risk factor of 1.25 for enhancement, as it was a previously existing wetland footprint, has a strong likelihood of success, will be conducted prior to mining, while acknowledging a risk for invasive species vulnerability (described below) during establishment.

A single risk score must be determined and assigned to each UMAM Assessment Area, considering the applicability and relative significance of the factors provided in 62-345.600(2)(a-f), based upon consideration of the likelihood and the potential severity of reduction in ecological value due to these factors. The risk score has a significant effect on the overall Functional Gain (FG) attained by the proposed mitigation. For instance, a risk score of 1.5 effectively eliminates one-third of the FG from the proposed mitigation and a risk score of 2.0 eliminates half, regardless of any other factor such as temporal lag.

The six specific factors to be considered in risk scoring outlined in 62-345.600(2)(a-f), F.A.C are listed below, along with specific information regarding how the proposed project relates to each. Details on how the proposed conditions will be achieved and maintained are found throughout the application materials. This information includes, but is not limited to the presentation of a detailed integrated groundwater/surface water model, commitment to the



use of native topsoil or muck when available, the use of sand tailings as the substrate for all wetland reclamation, as well as preservation and/or creation of upland vegetative buffers that exceed the any state or federal width requirements. Furthermore, every area included as federal mitigation is proposed for permanent protection that includes perpetual management and a commitment to maintain baseline conditions.

Hydrologic Vulnerability - 62-345.600(2)(a)

This factor requires consideration of the “vulnerability of the mitigation to and the extent of the effect of different hydrologic conditions than those proposed”. Specifically, the degree of dependence on mechanical or artificial means (i.e. pumps or adjustable weirs) to achieve proposed hydrologic conditions, effects of

water withdrawals, diversion or drainage features, reliability of the hydrologic data, modeling, and design, and the hydrologic complexity of the proposed community must be considered. Systems with relatively simple and predictable hydrology would entail less risk than complex hydrological systems.

The CMP includes no dependence on artificial means to achieve hydrology and no post-reclamation water withdrawals are proposed as part of the post- reclamation landscape. The artificial drainage features (ditches) that currently exist in the landscape will be eliminated through mining and reclamation and no ditches are proposed to be reclaimed. Further, the permanent protection provided will prohibit ditching within the mitigation wetlands in perpetuity.

Finally, the design of the SPE USACE Reclamation Plan [Mitigation Work Plan, Part 1] (Attachment A of the CMP) includes extensive modeling of pre and post- mining hydrology and topography to ensure that the reclaimed systems will function as designed and that drainage basins will function similar to pre-mining basins to maintain or improve pre-mining watershed flow regimes. As detailed in the report “Integrated Simulations for the South Pasture Extension Mine for Pre- Mining and Post- Reclamation Conditions” (AMEC-BCI 2011), which is part of the USACE Application Record, post-reclamation surface water and groundwater hydrology were evaluated in detail using the MIKE SHE/MIKE-11 integrated groundwater surface water modeling platform. Results of the integrated modeling indicate that the proposed mitigation takes into account watershed needs and will result in ecologically self-sustaining mitigation.

The post-mining hydrologic modeling reports (attached as Attachment A – Part 1, AMEC_BCI Integrated Model Report) will be utilized to ensure that tailings are placed and graded to the correct depth and extent to ensure that the hydrologic regimes for reclaimed wetlands are successful in supporting and sustaining the target wetland types. All wetlands will be monitored for hydrologic performance and vegetative composition after they are constructed.



Based on the information provided above, hydrologic vulnerability was considered low risk for all mitigation types, however Mosaic agreed to consider hydrologic vulnerability within "stand-alone" wet prairies and seepage wetlands as moderate because of the low tolerance for variability/error within these systems.

Vegetative Vulnerability - 62-345.600(2)(b)

This factor requires consideration of "the vulnerability of the mitigation to the establishment and long-term viability of plant communities other than that proposed, and the potential reduction in ecological value which might result, considering the compatibility of the site soils and hydrologic conditions with the proposed plant community, planting plans, and track record for community or plant establishment method." This factor is essentially the risk that the proposed wetland will transition to an upland, or a type of wetland community that was not proposed because of improper hydrology or soils. It is separate and distinct from vulnerability to colonization by invasive or exotic species, which is considered in the next section.

As noted in the hydrologic vulnerability section above, extensive modeling has been conducted in preparing the CMP and designing post reclamation habitats and further modeling will be conducted to ensure proper hydrology for the species proposed. In addition, Mosaic has committed to employing the best available technology to provide viable growing medium. Specifically, the CMP states that forested and herbaceous wetlands will be created on sand tailings and then graded and capped with suitable wetland topsoil/muck, if available, or other suitable organic matter with specific depths and structure to be determined by habitat type. To create microhabitat and habitat heterogeneity within the wetlands, the created systems will be graded to provide a range of habitat types and distinct zonation, from seasonal to permanent inundation. Direct transfer of small shrubs and trees from the future mining areas will be utilized to the extent practicable. Any planted vegetation will be consistent with the species diversity and density of the targeted wetland community type. Species will be selected on design elevations of constructed wetlands and comparisons with similar wetlands proposed for impact.

The specific details for wetland reclamation are presented in Section 2 of the Mitigation Work Plan (Attachment A of the CMP), including construction methods for forested wetlands (Section 2.1, page 5) and herbaceous wetlands (Section 2.2, page 7). A detailed list of vegetation to be utilized in the reclamation by habitat type and planting depth is presented in Table RP-2 (page 8 and 9) of the Reclamation Plan.

Mosaic has a history of creating viable plant communities using similar planting plans and techniques as those proposed in the CMP. Permit conditions will include



requirements for percent cover and species composition, where appropriate, and will also limit intervention by Mosaic for two years prior to release from monitoring thereby increasing the likelihood that the mitigation, as described in the CMP, will be self-sustaining.

Based on the information provided above, vegetative vulnerability was considered low risk for most herbaceous wetlands, but moderate for wet prairies because of the low tolerance for hydrologic variability/error and moderate for all forested systems based on the time necessary to reach maturity.

Invasive Species Vulnerability - 62-345.600(2)(c)

This factor requires consideration of “the vulnerability of the mitigation to colonization by invasive exotic or other invasive species, considering the location of recruitment sources, the suitability of the site for establishment of these species, [and] the degree to which the functions provided by plant community would be affected.”

As discussed in the section above, all established wetlands will be reclaimed to maximize direct transfer of muck from mined wetlands for use in creating an appropriate growing medium to the extent practicable. The CMP dictates that any stockpiled muck must be stockpiled in a manner to minimize both oxidation and colonization by nuisance species. In the event that insufficient wetland muck or topsoil is available, Mosaic will coordinate the use of other appropriate materials with USACE. Only wetland topsoil that is reasonably free of any nuisance or exotic vegetation will be used in reclamation.

As a maintenance practice, equipment that has been, or potentially been, operated in nuisance/exotic infested areas will be cleaned prior to being brought on-site to control the accidental introduction of undesirable seeds.

Subsequent to establishment, mitigation maintenance will include at least semi-annual inspections of wetlands for the presence of nuisance and exotic species and other protective measures (i.e. fencing) identified as needed during establishment of wetlands. Nuisance and exotic vegetation identified during the inspections will be controlled by appropriate methods, such as herbicide application, fire, hydrologic, or mechanical means in to limit their cover to less than 5 percent and to remove exotic species when present in each mitigation area. Manual or chemical treatment of nuisance and exotic species will be implemented at least annually when cover of undesirable vegetation in any mitigation area increases to more than five percent cover or if invasive exotic species are present. Manual or chemical treatment will also be implemented if cogon grass (*Imperata cylindrica*) coverage exceeds 5 percent on reclaimed sites or five percent within 300 feet of any mitigation wetland or other surface



water.

While the potential for existing or new nuisance/exotic species invasion exists in all habitat types, the techniques employed by the applicant and the enforceable conditions that will ultimately exist in the permit will drastically reduce the risk of such occurrences on the SPE. Permit conditions will include a requirements for semi-annual monitoring, limiting the percent cover of nuisance and exotic species prior to monitoring release, and also limiting intervention by Mosaic (i.e. supplemental planting, herbicide, etc.) for two years prior to release from monitoring.

Based on the information provided above, invasive species vulnerability was considered moderate risk for all mitigation types.

Water Quality Degradation Vulnerability - 62-345.600(2)(d)

This factor requires the consideration of “the vulnerability of the mitigation to degraded water quality, considering factors such as current and future adjacent land use, and construction, operation, and maintenance of surface water treatment systems, to the extent that ecological value is affected by these changes.”

The SPE CMP has been designed to maintain and improve the quality and quantity of aquatic resources within the Peace River Watershed. Mining and reclamation will eliminate agricultural ditching, which will reduce flashy contributions of agricultural stormwater that is currently common within the landscape. Furthermore, there is a significant increase in width of (native) vegetated buffer in the post-reclamation landscape relative to many wetlands proposed for impact, which should improve the onsite and downstream water quality. In fact, the proposed buffer of wetlands and streams in the SPE CMP is over three times wider than that recommended by the National Resource Conservation Service for protection of stream water quality (FAEIS pg. 5-33).

Section 4.4.6 of the FAEIS stated that no significant water quality impacts would be expected as part of the SPE and the ERP constitutes water quality certification for the project. The post reclamation landscape will include a vast area of wetlands and upland buffers under permanent protection that will drastically reduce the likelihood of future water quality degradation.

Based on the information provided above, water quality degradation vulnerability was considered low risk for all mitigation types.

Secondary Impact Vulnerability - 62-345.600(2)(e)

This factor requires the consideration of “the vulnerability of the mitigation to



secondary impacts due to its location, considering potential land use changes in surrounding area, existing protection provided to surrounding areas by easements, restrictive covenants, or federal, state, or local regulations, and the extent to which these factors influence the long term viability of functions provided by the mitigation site.”

The selection of each wetland for federal mitigation included an analysis of the vulnerability to secondary impacts. The wetlands proposed for mitigation are part of a vast network of consolidated reclaimed uplands and wetland habitat that complements the onsite preservation and provides an expanded wildlife corridor connecting onsite and offsite habitats. Wetlands that were considered to be most vulnerable to secondary impact because of their proximity to future development corridors – or a general isolated location – were excluded from the CMP as mitigation. The proposed permanent protection via a Conservation Easement includes all CMP mitigation wetlands as well as an upland buffer that extends, in most cases, well beyond the limits of the wetland.

Based on the information provided above, secondary impact vulnerability was considered low risk for all mitigation types.

Direct Impact Vulnerability - 62-345.600(2)(f)

This factor requires the consideration of “the vulnerability of the mitigation to direct impacts, considering its location and existing and proposed protection provided to the mitigation site by easements, restrictive covenants, or federal, state, or local regulations, and the extent to which these measures influence the long term viability of the mitigation site.” Mosaic has agreed to protect all mitigation wetlands using a Conservation Easement. All direct dredging, filling, tree clearing, or other habitat alteration not associated with land management are prohibited. The USACE will have the right to enforce this restriction through granting of the CE.

Based on the information provided above, direct impact vulnerability was considered low risk for all mitigation types.

Table 12 below provides a risk consideration summary calculation for the types of mitigation provided in this plan. In this calculation, a consideration determined to be low risk is assigned a score of one, moderate risk is assigned a score of two and high risk is assigned a score of three. The subsequent risk calculation demonstrates that the overall risk scores assigned for each general habitat type are appropriate for the type of mitigation offered, given the methods employed and the commitments outlined in the CMP and application materials.



Table 12. Risk Consideration Summary

Risk Considerations per 62-345.600(2)(a-f), F.A.C.	Herbaceous		Forested	
	Typical	Wet Prairie 643	Typical	Off-Site
Hydrologic Vulnerability	1	1	1	1
Vegetative Vulnerability	1	2	2	2
Invasive Species Vulnerability	2	2	2	2
Water Quality Vulnerability	1	1	1	1
Secondary Impact Vulnerability	1	1	1	1
Direct Impact Vulnerability	1	1	1	1
Sum of Scores	7	8	8	8
Calculated (avg) Risk Score	1.17	1.33	1.33	1.33
Assigned Risk Score	1.25	1.5	1.5	1.5



Preservation Mitigation Calculations

Section 332.3(h) of the CMR dictates that preservation may be used to provide compensatory mitigation for activities authorized by DA permits when the five specific criteria listed below are met.

- i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed
- (ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available
- (iii) Preservation is determined by the district engineer to be appropriate and practicable
- (iv) The resources are under threat of destruction or adverse modifications
- (v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust)

The importance of the resources and their contributions related to (i), (ii), (iii), and (v) are described in the above sections of the CMP and related to priorities of the CHNEP CCMP. Additionally, Mosaic's proposed preservation also meets item (iv) as described below.

Conservation easement protection would prevent aquatic resource degradation principally by precluding the conversions of adjacent uplands into agricultural or residential uses on the avoided and reclaimed lands subject to easement protection. Application of the UMAM to these potential land use changes would prevent the following losses in aquatic resource functions in the wetlands to be protected by easements:

The existing condition of the proposed preservation areas (i.e. upland buffers, riparian areas and the preserved wetlands) would not be protected from degradation from non-corps regulated activities and/or exempt agricultural activities without the Conservation Easement proposed as part of this project. For example, without the project, no regulatory obstacles prevent 1) the surrounding uplands and non-jurisdictional wetlands from being converted to a more intensive land use (i.e., pasture, row crops, etc.), 2) the surrounding uplands and non-jurisdictional wetlands from being ditched resulting in an altered hydroperiod and/or degradation of water quality, 3) the logging of forested wetlands and their surrounding native forested uplands that could compromise community structure, and 4) the composition and diversity of desirable species that may be

compromised as the surrounding landscape is altered to create crops, pastureland or other similar use. Unregulated activities could have an indirect adverse effect on the avoided/preservation wetlands. In addition, no current restrictions exist on grazing or hunting activities and no land management is required without the mechanisms outlined as a part of this project.

While the unregulated activities described above would not totally eliminate the functions provided by the wetlands within the preservation area, they could significantly reduce the value of these functions. The UMAM analysis (Table 9) includes application of the "indirect adverse modifications to the resource" concept, as well as the potential for the unregulated activities described above to adversely affect the onsite aquatic resources. The "without project" and "with project" scores were applied as directed by the ACOE Mining Team. These considerations are included in Part II of the UMAM data sheets and specifics on how these concepts were applied are described below.

Table 9 includes the "Current" scores of each Assessment Area designated as wetland preservation. Note the Community Structure and Water Environment scores in the "With Mitigation" condition are identical to those in the "Current" condition. This indicates that, although Mosaic has committed to significant actions adjacent to the preservation areas that will serve to promote natural ecological and hydrologic conditions, no UMAM "Lift" is attributed to these actions. Increases in the overall scores from the "Current" condition may be attributed to the co-located preserved uplands, and not to reclamation or a direct enhancement of the Preservation wetlands. The uplands provide buffers to protected wetlands/streams as well as wildlife habitat/connectivity, consistent with the Compensatory Mitigation Rule (CMR). The CMR does recognize that mitigation credit is appropriate when uplands provide essential services to protected wetlands and must be awarded when upland buffers are required. Note that the "Current" scores do not factor into the UMAM calculation for preservation. After uplands were removed from the dataset, the determination of credit from preservation was done in accordance with Chapter 62-345.500(3)(a) which states the following:

When assessing preservation, the "with mitigation" assessment shall consider the potential of the assessment area to perform current functions in the long term, considering the protection mechanism proposed, and the "without preservation" assessment shall evaluate the assessment area's functions considering the extent and likelihood of what activities would occur if it were not preserved, the temporary or permanent effects of those activities, and the protection provided by existing easements, restrictive covenants, or state, federal, and local rules, ordinances and regulations.

The gain in ecological value is determined by the mathematical difference between the Part II scores for the "with mitigation" and "without preservation" (the delta) multiplied by a preservation adjustment factor. The preservation



adjustment factor shall be scored on a scale from 0 (no preservation value) to 1 (optimal preservation value), on one-tenth increments. The score shall be assigned based on the applicability and relative significance of the following considerations:

- 1. The extent to which proposed management activities within the preserve area promote natural ecological conditions such as fire patterns or the exclusion of invasive exotic species.*
- 2. The ecological and hydrological relationship between wetlands, other surface waters, and uplands to be preserved.*
- 3. The scarcity of the habitat provided by the proposed preservation area and the degree to which listed species use the area.*
- 4. The proximity of the area to be preserved to areas of national, state, or regional ecological significance, such as national or state parks, Outstanding Florida Waters, and other regionally significant ecological resources or habitats, such as lands acquired or to be acquired through governmental or non-profit land acquisition programs for environmental conservation, and whether the areas to be preserved include corridors between these habitats.*
- 5. The extent and likelihood of potential adverse impacts if the assessment area were not preserved.*

Consistent with the USACE application of the UMAM rule, the SPE "without preservation" assessment considered an assessment area's functions, including the type, extent and likelihood of activities that would occur if the area were not preserved, the temporary or permanent effects of those activities, and the protection provided by existing easements, restrictive covenants, or applicable rules, ordinances and regulations.

"Without project" scoring is based on the idea that the existing condition of the avoided/preservation areas (i.e. upland buffers, riparian areas and the preserved wetlands) would not be protected from degradation from non-corps regulated activities and/or exempt agricultural activities. For example, without the project, no federal regulatory obstacles prevent 1) the surrounding uplands and non-jurisdictional wetlands from being converted to a more intensive land use (i.e., pasture, raw crops, etc.), 2) the surrounding uplands and non-jurisdictional wetlands from being ditched resulting in an altered hydroperiod and/or degradation of water quality, 3) the logging of forested wetlands and their surrounding native forested uplands that could compromise community structure, and 4) the composition and diversity of desirable



species that may be compromised as the surrounding landscape is altered to create crops, pastureland or other similar use. Unregulated activities could have an indirect adverse effect on the avoided/preservation wetlands.

The PAF was uniformly assigned a value of 1.0 for all wetland preservation areas based on the five considerations outlined above.

The 2008 rule also allows for all aquatic resources to be considered as compensatory mitigation at the discretion of the District Engineer. Although Mosaic is not requesting credit for the extensive upland preservation and enhancement proposed as part of the SPE mine, credit is being requested for the 22.16-acres of proposed wetland preservation currently considered to be non-jurisdictional according to the October 18, 2012 SPE Jurisdictional Verification Letter. These wetlands are proposed to be placed under a Conservation Easement (CE) prior to mining and, upon execution of this CE, the USACE will have third party beneficiary rights, right of reasonable access, as well as a right to enforce the conditions within the CE. These wetlands provide appropriate compensation for impacts to Waters of the United States (WOUS) because many of the WOUS proposed for impact were historically isolated and are only considered to be jurisdictional because of upland-cut ditch connections. These preservation wetlands exist as some of the few remaining examples of the isolated wetlands on the site that have not been significantly affected by agricultural ditching and land conversion. In addition, these wetlands may provide significant habitat for federally listed species, including the wood stork, because of habitat type and short hydroperiod. The U.S. Fish and Wildlife Service stated in their Biological Opinion that, "All wetlands (1,769.2 ac of jurisdictional and 242.3 ac of non-jurisdictional) on-site are considered suitable wood stork habitat..."

Section 5.9 of the FAEIS states that "The preservation and integration of high-quality habitats into the Integrated Habitat Network (IHN) benefits regional wildlife populations and various listed plant and animal species. Habitats that are typically targeted for avoidance and preservation include riverine systems and associated floodplains, large herbaceous wetlands, mature upland forests, and xeric upland habitats." The proposed Compensatory Mitigation Plan was designed to be consistent with the goals and objectives of the IHN and is consistent with the FAEIS, and the current post-reclamation plan allows for a more favorable configuration of habitats and a less fragmented landscape than currently exists.

The concepts and considerations provided above, and guidance provided by the ACOE Mining Team, result in the scores and lift provided in Table 9. Because the preservation proposed are specifically designed to protect the habitat and corridors that support the ecological functioning of the aquatic resources, credit is appropriate.



Stream Functional Analysis

Compensation for unavoidable impacts to streams is separately demonstrated by the type-for-type stream restoration as detailed in the Stream Restoration Plan (Attachment A, Part 2) and the Stream Functional Assessment summarized in Table 2 of the Compensatory Mitigation Plan. Similar to wetlands mitigation sufficiency demonstrated above, Mosaic has used a functional assessment approach to demonstrate the adequacy of its stream mitigation plan. A numerical spreadsheet model has been developed utilizing the FDEP Habitat Assessment procedure described in section 2.1 of the Stream Restoration Plan. Stream mitigation is calculated on a linear foot basis as compared to the acreage basis used for wetlands. Channel centerline length is used to calculate both impacts and mitigation so as to properly account for sinuosity. Stream acreage is not utilized when designing mitigation for stream impacts, nor for calculating the sufficiency of the mitigation, for the following reasons:

- Stream acreage does not account for stream channel length because valley length is the only measurement available to calculate acres, thereby failing to account for stream sinuosity;
- Stream width is often greater than morphologically appropriate due to historical impacts including cattle and vehicle trail crossings, historical erosion, and, in some cases, artificial channelization;
- The bankfull width of a stream sized properly is based upon, among other factors, the drainage area; therefore, stream width cannot be increased or decreased independent of other geomorphic variables; and
- Streams are linear surface water features with ecological values more dependent on longitudinal features than cross-section features (e.g., riffle-pool habitat).
- Mitigation to compensate for artificially wide existing channels could result in creation of stream channels that would not experience bankfull events, thereby increasing the likelihood of erosion over time into undesirable morphological characteristics;

The Stream Condition Index, or SCI, is one of the principal tools FDEP has developed to assess whether streams are healthy or impaired under the Clean Water Act total mass daily load program and Numeric Nutrient Criteria (FAEIS pages 3-113 through 3-116). In addition to macroinvertebrate sampling, the SCI procedure includes applying the FDEP Habitat Assessment Procedure, which FDEP derived from EPA's Rapid Bio-assessment Protocols.

The FDEP Habitat Assessment Procedure evaluates four primary and four secondary habitat components. The primary habitat components are:



-
- Substrate Diversity - number of productive habitats present = 1 – 20;
 - Substrate Availability - % of major productive habitats present = 1 – 20;
 - Water Velocity – score on velocity between < 0.05 m/sec and > 1.0 m/sec = 1 – 20; and
 - Habitat Smothering - % of habitat affected by sand, silt, or algae = 1 – 20.

The secondary habitat components are:

- Artificial Channelization – degree sinuosity reduced by dredging = 1 – 20;
- Bank Full Stability – location of bank full indicators on each bank = 1 – 20;
- Riparian Buffer Zone Width – width of native habitat along each bank = 1 – 20; and
- Riparian Zone Vegetation Quality - % of native habitat in riparian zone = 1 – 20.

The scores range from a minimum score possible of 12 and a maximum score possible of 160. FDEP classifies stream habitat as follows:

- Optimal = 121 – 160,
- Suboptimal = 81 – 120,
- Marginal = 41 – 80, and
- Poor = ≤ 40.

Mosaic has applied the FDEP Habitat Assessment Procedure as the metric to numerically account for functional losses and gains associated with stream habitat impacts and mitigation. Comparison of FDEP's procedure to others demonstrates the FDEP procedure properly applies EPA's Rapid Bio-assessment Protocol. In addition, the validity of SCI, along with the FDEP Habitat Assessment Procedure, was carefully reviewed during the recent numeric nutrient criteria rulemaking.

Stream functional losses are calculated by applying the following equation:

$$\text{Function Loss (FL)} = \text{ESL} \times (\text{HAS}/160) \times \text{TL}$$

Where: ESL: = Existing stream segment length;

HAS = Habitat Assessment score (maximum possible = 160); and

TL = Temporal lag factor

Stream lengths and Habitat Assessment scores for impact areas are provided on Table 4A. The temporal lag factor is applied to calculate actual functional loss to reflect stream function removal over a period of 16 years rather than penalizing for complete functional loss upon permit approval. The Temporal Lag Factor used for the functional loss calculations are shown on Table 5.



Stream functional gains are calculated by applying the following equation:

$$\text{Functional Gain (FG)} = [\text{CSL} \times (\text{HAS}/160)] \div (\text{R} \times \text{TL})$$

Where: CSL = Created wetland stream length;

HAS = Documented or Predicted Habitat Assessment score;

R = Risk factor; and

TL = Temporal lag factor

The following explain the HAS, R, and TL factors applied:

Stream lengths and Habitat Assessment scores for stream mitigation areas are provided on Table 4B and 4C. Table 4B reflects that preservation areas would be provided prior to mining, therefore Risk and Temporal Lag are appropriately set at 1. The Preservation Streams were scored similarly to the Preservation wetlands concepts. "Without project" scoring in Table 4B is based on the premise that the existing condition of the avoided/preservation areas (i.e. upland buffers, riparian areas and the preserved streams) would not be protected from degradation from non-corps regulated activities and/or exempt agricultural activities. For example, without the project and associated CE, no regulatory obstacles prevent 1) the surrounding uplands and non-jurisdictional wetlands from being converted to a more intensive land use (i.e., pasture, row crops, etc.), 2) the surrounding uplands and non-jurisdictional wetlands from being ditched resulting in an altered hydroperiod and/or degradation of water quality causing habitat smothering, changes within water velocity within the streams, 3) the logging of forested wetlands and their surrounding native forested uplands that could compromise the riparian buffer, changes in bank stability, and 4) the composition and diversity of desirable species may be compromised as the surrounding landscape is altered to create crops, pastureland or other similar uses. Unregulated activities could have an indirect adverse effect on the avoided/preservation streams, causing a reduction in the stream habitat. Table 4C describes the expected quality (including time lag and risk) of the established streams (further described below).

Predicted Habitat Assessment Scores (HAS)

Mosaic has assigned either the actual documented HAS (for impact areas) or, for created systems, a reasonably expected functional stream habitat value of 105 out of a possible 160, which is within the range of the suboptimal category (suboptimal ranges between 86 and 128). The selected stream reference systems that will be utilized to determine success standards also fall within the suboptimal range. This score is also based on streams already established elsewhere on Mosaic property. Habitat Assessments conducted at Bryant's Branch, LMR-8, and Maron Run, streams established following phosphate ore extraction at Mosaic's Fort Meade, Four Corners, and South Fort Meade Mines are shown below. The following data compares these



results to the results projected for the streams to be established on the SPE Mine:

Phosphate Ore Extractions						
Parameter	BB	LMR-8	MR	Average	SPE	% Achieved
SD	16	13	5	10	10	100
SA	15	20	18	17	12	71
WV	12	14	14	13	11	85
HS	10	17	15	12	16	133
AC	10	18	10	10	16	160
RBS	10	9	10	10	6	60
LBS	10	9	10	10	6	60
RBW	10	10	10	10	10	100
LBW	10	10	10	10	10	100
RBQ	10	4	5	6	4	57
LBQ	10	4	5	6	4	57
Total Score	123	128	112	121	105	90

Note: Totals affected by averaging.

The increased functional values projected for habitat smothering and artificial channelization at SPE over Bryant's Branch and Maron Run are attributable to the use of geotextile fabric to control erosion and preconstruction modeling of stream reaches to be re-established. These design techniques have been proven at other Mosaic stream creation sites, but were not employed at Bryant's Branch or Maron Run.

For these reasons, Mosaic has assigned an average lift in functional stream habitat of 105 out of a possible 160, which is within the range of the suboptimal category (suboptimal ranges between 81 and 120). The basis for this scoring is as follows:



Onsite Stream Re-Establishment Scores	
Habitat Assessment Parameter	Score/Possible Score
Substrate Diversity (SD)	10/20
Substrate Availability (SA)	12/20
Water Velocity (WV)	11/20
Habitat Smothering (HS)	16/20
Artificial Channelization (AC)	16/20
Right Bank Stability (RBS)	6/10
Left Bank Stability (LBS)	6/10
Right Riparian Buffer Width (RBW)	10/10
Left Riparian Buffer Width (LBW)	10/10
Right Riparian Buffer Quality (RBQ)	4/10
Left Riparian Buffer Quality (LBQ)	4/10
Total Score	105/160

These scores are based upon the projected stream condition three years following channel construction and, therefore, reflect immaturity of the stream system vegetative structure. Examples of increased function expected to occur as the vegetation matures with time include substrate diversity and availability that will increase, habitat smothering that will decrease, and bank stability and riparian buffer vegetation quality that will increase.

Stream Mitigation Risk Factors (R)

Two types of risks are associated with stream establishment: (1) risk of failing to reach the target habitat assessment score; and (2) the risk of degradation over time after the



target habitat assessment score has been achieved. A risk factor of 1.11 was used in the calculations to account for risks associated with proposed secondary uses within those areas, Mosaic's mitigation and long term management plans minimize both of these risks by employing the measures described in the following subsections.

The stream channel design described in Section 2 of the Stream Restoration Plan eliminates the risk of failure to reach the target habitat functional value. This sequence results in an iterative and adaptive process that requires Mosaic to continue to modify the design until success is achieved, should initial efforts fail to reach the target. Coupled with the stream design modeling tools available to properly size the stream channel geometry and plan form, the risk associated with this sequential approach is not whether success will be achieved, but rather whether additional time beyond three years will be required.

In addition, there are a number of proven stream restoration tools that are applicable to created streams not yet achieving success criteria. These include adding large woody debris to create instream habitat, pool, or added sinuosity; planting trees or installing additional or different geotextile fabric in streambanks; excavating additional pools; removal of excessive sedimentation; and supplemental planting in the riparian buffer (see Table 4-8-A-xi). As a result, should a given stream segment fail to reach the design target, it is unlikely that the design team would need to "start over" to correct any deficiencies.

The risk is further reduced because all of the stream mitigation would take place in a controlled watershed that is isolated by the ditch and berm severance from the receiving stream. Mosaic can, therefore, control the flow rate in the stream by pumping mine recirculation system water through the created channel in pulses or continuously to test stream channel performance in terms of bank full events, erosion or accretion, stream flow velocities, etc. Construction of stream channels in the isolated environment Mosaic creates with the ditch and berm system essentially results in an in place "test cell" that is in stark contrast to attempts to restore existing degraded streams in situ in terms of risks of failure and consequences to the downstream, offsite aquatic environment

The comparison between Mosaic's historic performance at Bryant's Branch, LMR-8, and Maron Run and the projections for the SPE Mine correspond to a risk factor of 0.90 (or 1.11). This means there is only a 10 percent probability that Mosaic's future performance would fail to achieve results similar to its track record.

Degradation risk relates to the reduction of the functional value in the future following achievement of the success criteria and release of the financial responsibility instrument. On the SPE, this would be minimized by a 60-foot wide buffer on each side of the created streams. Table 11 details the buffers, which include uplands as well as wetlands. The restrictive provisions of the conservation easement presented in Attachment C would apply to the created stream channels because of their location within SPE Post Reclamation Protection Level 1 shown on LTMP Figure 3 (Attachment D).



Stream Temporal Lag Factor

Similar to the wetland mitigation temporal lag factors described above, Time Lag factors in Tables 5 and 6H were utilized in the calculation to convert the functional stream habitat lift generated by the created streams to facilitate evaluating whether mitigation more than offsets the functional loss created by mining. Table 4C assumes no functional habitat value is credited until the created stream is approved to be connected to the undisturbed downstream network, meaning that the hydrology and water quality performance standards have been met and the mitigation sequence has advanced to final pre-release monitoring. Under this assumption, zero value is applied until the reconnection dates listed on Table 4C are reached. Once reconnected, the projected habitat values are applied.

The Stream Restoration Plan includes thorough descriptions of the proposed stream impacts. The plan summarizes the impact and creation of mitigation of streams in the form of linear feet (Attachment A, Part 2, Table SRO-2), and the quality of the streams proposed for impact (2010 Habitat Assessment Scores and CMP Table 4A, 4B, and 4C). The quality, amount and type of the streams proposed for creation are provided in Table SRO-5B and the Reference Stream Sampling Plan (CMP Attachment F) and in CMP Table 4A, 4B, and 4C. As indicated in the Stream Restoration Plan, more linear feet of natural, intact stream channel will exist on site post-reclamation than presently exists. Ditched, agriculturally impacted streams on site will either be restored or enhanced in accordance with the Stream Restoration Plan (which is Part 2 of the Mitigation Work Plan). Also a minimum 120ft. buffer will remain protected in perpetuity as indicated on Table 11 and LTMP Figure 2.

The ACOE Stream Mitigation will offset 13,361.14 units of loss with 13,440.6 units of lift associated with preservation and creation, for a surplus of 79.48 units that will be unavailable for compensation for any other future impacts. Table 2 demonstrates the sufficiency of the Stream Mitigation plan using the functional assessment approach described above.



Mitigation Work Plan - Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; soil management; and erosion control measures. For stream mitigation projects, the mitigation work plan may also include other relevant information, such as planform geometry, channel form (e.g., typical channel cross-sections), watershed size, design discharge, and riparian area plantings. 33 CFR §332.4(c)(7)

The implementation of the SPE Compensatory Mitigation Plan will be carried out according to the SPE Mitigation Work Plan (Attachment A) consisting of two parts including the USACE Reclamation Plan and the Stream Restoration Plan. These individual plans are summarized below. The reclamation activities will commence upon completion of mining activities in a particular mine block.

Wetlands Reclamation Plan (Attachment A, Part 1)

The Reclamation Plan provides specific details regarding the construction methodology to be employed for the restoration of upland and wetlands habitats on the SPE and off-site SP forested wetlands. Please note, the Reclamation Plan as originally submitted to the USACE (which included FDEP reclamation references) in September 2013, for completeness purposes, remains a part of the DA Application Record.

Specific reclamation details outlined in the USACE Reclamation Plan Sections 1-3 include construction methods, use of native soils, site topography, vegetation, hydrology, and exotic vegetation control. As noted in this plan, forested and herbaceous wetlands will be created on sand tailings and then graded and capped with suitable wetland topsoil/muck, if available, or other suitable organic matter with specific depths and structure to be determined by habitat type. To create microhabitat and habitat heterogeneity within the wetlands, the created systems will be graded to provide a range of habitat types and distinct zonations, from seasonal to permanent inundation. In addition, habitat enhancements including snags to encourage wildlife usage, and stumps, logs, and shrubs to provide hummocks will be installed in the created wetlands where appropriate.

Likewise, direct transfer of small shrubs and trees from the future mining areas will be utilized to the extent practicable. Vegetation to be planted will be consistent with the species diversity and density of the targeted wetland community type. Species will be selected on design elevations of constructed wetlands and comparisons with similar wetlands proposed for impact. The



specific details for wetland reclamation are presented in Section 2 (page 4) of the USACE Reclamation Plan, including construction methods for forested wetlands (Section 2.1, page 4) and herbaceous wetlands (Section 2.2, page 6). A detailed list of vegetation to be utilized in the reclamation by habitat type and planting depth is presented in Table RP-2 (page 8).

The USACE Reclamation Plan also includes the methodology to be utilized for the enhancement of onsite wetlands. On the SPE, wetland enhancement will be accomplished through the re-establishment of historic hydroperiods and elimination of deleterious, uncontrolled agricultural practices. Enhancement will both increase the habitat value of the existing historical wetland area and result in the return of wetland transitional plant species to the wetland fringes, which are often dominated by non-natives (for example, bahia if pasture surrounds the wetland). Specific methods to be employed include eliminating silviculture and ditching, and the installation of ditch blocks. The wetland enhancement details are provided in Section 3 of the USACE Reclamation Plan.

Stream Restoration Plan (Attachment A, Part 2)

The Stream Restoration Plan provides specific details regarding the construction methodology to be employed for the restoration of functioning streams on the SPE and the restoration of the Brushy Creek stream crossing. It was developed with the goals of avoiding, minimizing, and compensating for the mining impacts to lotic systems, preserving the highest quality systems, and replacing and improving the functions of streams proposed for impact. 10.5 miles of stream will be preserved prior to mining. Restoration of streams will include the enhancement and restoration of 9.1 miles of open waters, consisting of restoring ditched streams to natural channels, restoring natural channels from areas that have been mined, and enhancing a previously bypassed channel system associated with Lettis Creek. Of this restoration, 3.5 miles will be created as ACOE mitigation and placed under Conservation Easement (including a 120ft. buffer) after completion.

The restoration plan incorporates in-stream channel design and improvements, as well as a comprehensive overview of all lotic site conditions, which include headwater wetlands and in-line wetlands and the surrounding habitat zones of flanking wetlands and terrestrial communities within and along the riparian valley. To accomplish these goals, forested corridors and native upland riparian zones will typically replace those that were historically cleared for agriculture on the SPE. The reclaimed valleys will form an unditched drainage network with a flow regime that is not artificially flashy like the existing ditched systems. The Stream Restoration Plan pays significant attention to landscape scale associations important to overall stream function by matching drainage area to valley geomorphology, width of the meander belt, and functional process zone (FPZ) types and sequences. The design covers a full hierarchy of scales, restoring a



series of habitat patches and zones progressing from in-stream meso-habitats, such as individual logs and pools a few feet long, to the geomorphic and hydraulic linkages of entire lentic, paralentic, and lotic waterbodies and their associated ecotones encompassing many acres. These landscape linkages are based largely on the historic conditions of the property, prior to land clearing and ditching, which will provide a better overall lotic system versus that existing immediately prior to mining. The successful implementation of the stream restoration plan will result in the restoration of historic native, pre-agricultural conditions, wherever practical.

Maintenance Plan - A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed. 33 CFR §332.4(c)(8)

Mosaic will implement a vegetation maintenance program to promote the survivorship and growth of desirable species in all mitigation areas once construction is completed. The maintenance program is designed to meet USACE mitigation requirements and the goals of the mitigation plan.

The mitigation maintenance will include at least semi-annual inspections of wetlands and other surface waters for the presence of nuisance and exotic species and other protective measures (i.e. fencing) identified as needed during establishment of wetlands. Nuisance and exotic vegetation identified during the inspections will be controlled by appropriate methods, such as herbicide application, fire, hydrologic, or mechanical means in to limit their cover to less than five (5) percent and to remove exotic species when present in each mitigation area. Manual or chemical treatment of nuisance and exotic species will be implemented at least annually when cover of undesirable vegetation in any mitigation area increases to more than five (5) percent cover or if invasive exotic species are present. Manual or chemical treatment will also be implemented if cogon grass (*Imperata cylindrica*) coverage exceeds five (5) percent within 300 feet of any mitigation wetland or other surface water.

Funding of proposed maintenance activities for wetlands that have yet to be released and transitioned into long term management is included in the financial assurances mitigation cost estimate discussed below.

Performance Standards - Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives. 33 CFR §332.4(c)(9)

The DA permit will include the necessary performance standards as a condition of the permit.

Monitoring Requirements - A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for



monitoring and reporting monitoring results to the DE must be included. 33 CFR §332.4(c)(10)

Success of restoration efforts will be determined by implementing a comprehensive and extensive monitoring program that will be designed to gather sufficient data to demonstrate appropriate ecological conditions. Transects will be established in areas to be monitored, with periodic sampling points (the number of transects and sampling points will be based on area size) at which the following will be noted:

- Percent cover by desirable species by stratum
- Percent cover by exotic or nuisance specie
- Dominant species (planted or recruited at 5 percent cover or greater), with an estimate of cover of each
- Water depth relative to zonation
- Soil monitoring relative to muck depth, color, texture, litter accumulation and moisture
- The health and viability of the four trees nearest the point (forested areas only) by measuring DBH and height
- Tree density (forested areas only)

The mitigation wetland monitoring data will be summarized into a report that will include the above information as well as observed wildlife usage, an overall ecological evaluation, and any actions that may be required to improve the system. To the extent practicable, reports will be tabular in form for ease of review and year-to-year comparisons. Nuisance vegetation monitoring will consist of quarterly or semi-annual inspections of wetlands. Chemical or manual removal of the exotic species will occur semi-annually within all reclaimed wetlands until success has been obtained and the wetlands released.

Monitoring and reporting will be conducted consistent with the DA Permit.

Long-term Management Plan - A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management. 33 CFR §332.4(c)(11)

As required by 33 CFR § 332.7(b), the compensatory mitigation has been designed, to the maximum extent practicable, to be self-sustaining once the performance standards

have been achieved and the entire mine area released from further permit requirements. Therefore, little to no active long-term management is anticipated to be required beyond the operational life of the project.

The Long-Term Management Plan (Attachment D) provides specific protective measures and management strategies to be used for the monitoring and maintenance of the various SPE and off-site mitigation habitats to ensure that long-term sustainability of the mitigation areas once the performance standards contained in this CMP have been achieved. The Management Plan is intended to assure that the performance standards set forth in the CMP are sustained in perpetuity. Specific management techniques outlined in the Management Plan include prescribed fire and physical and chemical control of nuisance/exotic species and controlled grazing, as approved by the USACE. Additional protection measures including fencing, signage, and maintenance of access gates are also provided in the plan. Mosaic has also provided a financial assurance mechanism for the long-term management of the required compensatory mitigation in attachment D, Appendix 4.

Adaptive Management Plan - A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures. 33 CFR §332.4(c)(12)

To ensure the mitigation goals are met, Mosaic acknowledges that an adaptive management approach will be an integral part of the Reclamation Plan implementation. If monitoring identifies habitat deficiencies such as low plant survivorship or exotic/nuisance vegetation, or if the USACE and/or other regulatory agencies determine that the plan is not meeting its goals, Mosaic will promptly develop and implement a site-specific adaptive management/corrective action plan that addresses specific construction, maintenance, and/or enhancement measures that would be implemented to achieve the design objectives. Items to be considered in the corrective actions may include adjusting wetland hydrology, supplemental plantings, or changes to the maintenance plan to address nuisance species negatively affecting the mitigation. Any such adaptive management plan will be submitted to the USACE, as appropriate, for approval prior to implementation.

Financial Assurances - A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards. 33 CFR §332.4(c)(13)

Mosaic has provided a financial assurance mechanism sufficient to ensure satisfactory completion of the compensatory mitigation for the SPE project as required by the USACE permit. A copy of the final and accepted financial assurance documents, including the financial assurance instrument and the initial cost estimate as described below, are included in Attachment H. A condition in the USACE permit shall require the proposed mitigation financial assurance to be in place and funded prior to commencing the permitted activity.

Summarized, Mosaic will provide a financial responsibility mechanism equal to 110 percent (%) of the estimated mitigation costs for wetlands and other surface waters projected to be impacted in the first three years of operation, including monitoring and maintenance. Further, the financial responsibility is required to be updated yearly to cover, on a rolling basis, the cost

of mitigation activities proposed to be undertaken over the next three year period, with a 10% contingency factor for any adaptive management that might be required. The mechanism will be updated with revised costs until mitigation is released and transitioned into Long Term Management.

There will always be sufficient funds to cover the mitigation for completed impacts to waters of the United States. Financial assurances will be phased out as each mitigation area is deemed successful by the USACE, consistent with 33 CFR § 332.3(n)(4). These measures will ensure a high level of confidence that the mitigation will be successfully completed in accordance with the performance standards. 33 CFR § 332.4(13); § 332.3(n)

BC-MT-07	2025	77	306	147.26	0.63	93.00
BC-MT-08	2025	101	724	457.03	0.63	288.61
BC-MT-10	2025	119	393	292.29	0.63	184.58
BC-MT-12	2026	112	667	466.90	0.60	278.41
BC-MT-15	2023	99	534	330.41	0.71	233.01
BC-NC-01	2028	137	1425	1220.16	0.53	645.46
BC-NC-02	2028	111	1463	1014.96	0.53	536.91
BC-NC-07	2018	78	196	95.55	0.91	86.90
BC-NC-08	2018	78	144	70.20	0.91	63.85
BC-NC-09	2022	112	469	328.30	0.74	244.12
BC-NC-10	2022	112	149	104.30	0.74	77.56
BC-NC-11	2023	92	388	223.10	0.71	157.33
BC-NC-14	2026	67	232	97.15	0.60	57.93
BC-NC-15	2022	66	1060	437.25	0.74	325.14
BC-NE-01	2028	66	145	59.81	0.53	31.64
BC-NE-03a	2028	57	200	71.25	0.53	37.69
BC-NE-03b	2028	57	180	64.13	0.53	33.92
BC-NW-01	2027	137	678	580.54	0.56	326.32
BC-NW-02	2025	139	873	758.42	0.63	478.94
BC-NW-03a	2022	115	3302	2373.31	0.74	1764.80
BC-NW-06	2023	105	259	169.97	0.71	119.86
BC-NW-07b	2023	110	183	125.81	0.71	88.72
BC-SW-01	2023	50	1014	316.88	0.71	223.46
BC-SW-02	2023	138	1373	1184.21	0.71	835.11
BC-SW-03	2023	137	920	787.75	0.71	555.52
BC-SW-04	2022	136	711	604.35	0.74	449.39
BC-SW-05	2023	137	173	148.13	0.71	104.46
BC-SW-06	2020	142	310	275.13	0.82	226.73
BC-SW-07	2020	125	860	671.88	0.82	553.69
BC-SW-08	2021	78	601	292.99	0.78	229.50
LC-EB-01	2030	110	163	112.06	0.47	52.15
LC-EB-02	2030	110	137	94.19	0.47	43.83
LC-EB-03	2030	112	729	510.30	0.47	237.49
LC-EB-04a	2031	96	368	220.80	0.44	96.07
LC-EB-04b	2031	96	97	58.20	0.44	25.32
LC-EB-05	2031	96	106	63.60	0.44	27.67
LC-EB-10	2029	96	466	279.60	0.50	138.88
LC-EB-12	2031	61	508	193.68	0.44	84.27
LC-EB-13	2031	129	644	519.23	0.44	225.91
LC-EB-14	2031	100	202	126.25	0.44	54.93
LC-EB-15	2031	84	792	415.80	0.44	180.91
LC-MT-02	2029	97	768	465.60	0.50	231.26
LC-MT-03	2029	119	115	85.53	0.50	42.48
LC-NB-01	2029	130	212	172.25	0.50	85.56
LC-NB-04	2030	138	456	393.30	0.47	183.04
LC-NB-05	2031	111	680	471.75	0.44	205.26
LC-NB-06	2028	136	871	740.35	0.53	391.65
LC-NB-07	2029	118	284	209.45	0.50	104.03
LC-NB-08	2031	118	193	142.34	0.44	61.93
LC-NB-10	2028	135	770	649.69	0.53	343.68
TC-EB-01	2026	87	412	224.03	0.60	133.59
TC-EB-02	2026	115	1133	814.34	0.60	485.59
TC-EB-03	2026	105	380	249.38	0.60	148.70
TC-EB-04	2026	125	265	207.03	0.60	123.45
TC-EB-05	2026	100	207	129.38	0.60	77.15
TC-WB-01	2028	58	1271	460.74	0.53	243.73
Total Loss			32161	21778.24		13361.14

*Per SRO-7

**Per Table 4 Temporal Lag Factor for Wetland Functional Loss

BC-MT-01	111.2	139	7701	5352.195	6690.24	1338.05
BC-MT-02	101.6	127	1024	650.24	812.80	162.56
BC-MT-03	103.2	129	2638	1701.51	2126.89	425.38
BC-MT-04	104.8	131	2727	1786.185	2232.73	446.55
BC-MT-05	106.4	133	5325	3541.125	4426.41	885.28
BC-MT-06	98.4	123	2692	1655.58	2069.48	413.90
BC-MT-09	80.8	101	61	30.805	38.51	7.70
BC-MT-11	95.2	119	98	58.31	72.89	14.58
BC-MT-13	98.4	123	178	109.47	136.84	27.37
BC-MT-14	97.6	122	812	495.32	619.15	123.83
BC-MT-16	105.6	132	578	381.48	476.85	95.37
BC-NC-03	101.6	127	2767	1757.045	2196.31	439.26
BC-NC-04	96.8	121	310	187.55	234.44	46.89
BC-NC-05	105.6	132	2248	1483.68	1854.60	370.92
BC-NC-06	119.2	149	1995	1486.275	1857.84	371.57
BC-NC-12	86.4	108	1315	710.1	887.63	177.53
BC-NC-13	95.2	119	1321	785.995	982.49	196.50
BC-NC-16	48	60	109	32.7	40.88	8.18
BC-NE-02	52.8	66	55	18.15	22.69	4.54
BC-NE-04	81.6	102	80	40.8	51.00	10.20
BC-NE-05	108.8	136	1339	910.52	1138.15	227.63
BC-NE-06	100	125	589	368.125	460.16	92.03
BC-NE-07	116.8	146	719	524.87	656.09	131.22
BC-NW-03b	92	115	1180	678.5	848.13	169.63
BC-NW-04	114.4	143	468	334.62	418.28	83.66
BC-NW-05	98.4	123	549	337.635	422.04	84.41
BC-NW-07a	88	110	249	136.95	171.19	34.24
LC-EB-06	102.4	128	1267	810.88	1013.60	202.72
LC-EB-07	92	115	980	563.5	704.38	140.88
LC-EB-08	98.4	123	519	319.185	398.98	79.80
LC-EB-09	104.8	131	1906	1248.43	1560.54	312.11
LC-EB-11a	81.6	102	143	72.93	91.16	18.23
LC-EB-11b	81.6	102	147	74.97	93.71	18.74
LC-EB-16	94.4	118	351	207.09	258.86	51.77
LC-MT-01	101.6	127	4575	2905.125	3631.41	726.28
LC-NB-02	107.2	134	1935	1296.45	1620.56	324.11
LC-NB-03	104.8	131	4204	2753.62	3442.03	688.41
LC-NB-09	94.4	118	347	204.73	255.91	51.18
Total Preserve Credit			55501	36012.645	45015.81	9003.16

Mosaic Fertilizer, LLC.

South Pasture Mine Extension Compensatory Mitigation Plan

BC-MT-1-R	2028	105	953	625.41	0.5110	1.11	287.91
BC-MT-2-R	2028	105	587	385.22	0.5110	1.11	177.34
BC-NC-4-R	2034	105	1236	811.13	0.3341	1.11	244.15
BC-NE-1-R	2031	105	1851	1214.72	0.4186	1.11	458.13
BC-NE-2-R	2031	105	584	383.25	0.4186	1.11	144.54
BC-NW-1-R	2030	105	696	456.75	0.4485	1.11	184.56
BC-NW-2-R	2030	105	1001	656.91	0.4485	1.11	265.43
BC-NW-3-R	2030	105	3749	2460.28	0.4485	1.11	994.12
LC-NB-1-R	2033	105	4249	2788.41	0.3615	1.11	908.01
LC-NB-4-R	2035	105	1135	744.84	0.3076	1.11	206.38
LC-NB-5-R	2035	105	710	465.94	0.3076	1.11	129.10
TB-EB-1-R	2030	105	1082	710.06	0.4485	1.11	286.91
TB-WB-3-R	2030	105	569	373.41	0.4485	1.11	150.88
Total Creation Gain			18402	12076.33			4437.46

*As Described in Table CRP-3 and CRP-5

**Per Table 5 Temporal Lag Factor for Wetland Establishment



Table 5

Temporal Lag Factor for Wetland Functional Loss

Action	Year	Mine Year	Discount Percentage
T0 = Permit issued - Start of Impacts	2016	0	1.0000
Start of Reclamation	2017	1	0.9541
	2018	2	0.9095
	2019	3	0.8661
	2020	4	0.8241
	2021	5	0.7833
	2022	6	0.7436
	2023	7	0.7052
	2024	8	0.6678
	2025	9	0.6315
	2026	10	0.5963
	2027	11	0.5621
	2028	12	0.5290
	2029	13	0.4967
	2030	14	0.4654
Impacts Complete	2031	15	0.4351
	2032	16	N/A
	2033	17	N/A
Reclamation Complete	2034	18	N/A
	2035	19	N/A
	2036	20	N/A
	2037	21	N/A
	2038	22	N/A
	2039	23	N/A
	2040	24	N/A
	2041	25	N/A
	2042	26	N/A
	2043	27	N/A
	2044	28	N/A
	2045	29	N/A
	2046	30	N/A
	2047	31	N/A
	2048	32	N/A
Tmax = 32 yrs (15 years after Reclamation Completion)	2049	33	N/A



Table 6(H)		Temporal Lag Factor for Herbaceous Wetland Establishment on Mined Lands	
Action	Year	Discount Percentage	Mine Year
T0 = Permit issued - Start of Impacts	2016	0.9744	0
Start of Herbaceous Reclamation	2017	0.9292	1
	2018	0.8853	2
	2019	0.8427	3
	2020	0.8013	4
	2021	0.7612	5
	2022	0.7222	6
	2023	0.6843	7
	2024	0.6476	8
	2025	0.6119	9
	2026	0.5773	10
	2027	0.5436	11
	2028	0.5110	12
	2029	0.4793	13
	2030	0.4485	14
Impacts Complete	2031	0.4186	15
Herbaceous Reclamation Complete	2032	0.3896	16
	2033	0.3615	17
	2034	0.3341	18
	2035	0.3076	19
	2036	0.2818	20
	2037	0.2568	21
	2038	0.2325	22
	2039	0.2089	23
	2040	0.1860	24
	2041	0.1637	25
	2042	0.1422	26
	2043	0.1212	27
	2044	0.1008	28
	2045	0.0811	29
	2046	0.0619	30
	2047	0.0436	31
	2048	0.0263	32
Tmax = 32 yrs (15 years after All Reclamation Completion)	2049	0.0115	33



Table 6(F)		Temporal Lag Factor for Forested Wetland Establishment on Mined Lands	
Action	Year	Discount Percentage	Mine Year
T0 = Permit issued - Start of Impacts	2016	0.9246	0
	2017	0.8808	1
Start of Forested Reclamation	2018	0.8384	2
	2019	0.7971	3
	2020	0.7571	4
	2021	0.7182	5
	2022	0.6805	6
	2023	0.6438	7
	2024	0.6083	8
	2025	0.5737	9
	2026	0.5402	10
	2027	0.5077	11
	2028	0.4761	12
	2029	0.4454	13
	2030	0.4156	14
Impacts Complete	2031	0.3867	15
	2032	0.3586	16
	2033	0.3313	17
Forested Reclamation Complete	2034	0.3049	18
	2035	0.2792	19
	2036	0.2545	20
	2037	0.2308	21
	2038	0.2081	22
	2039	0.1864	23
	2040	0.1655	24
	2041	0.1454	25
	2042	0.1261	26
	2043	0.1074	27
	2044	0.0894	28
	2045	0.0721	29
	2046	0.0554	30
	2047	0.0396	31
	2048	0.0250	32
Tmax = 32 yrs (15 years after All Reclamation Completion)	2049	0.0115	33

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2016	02W-08-I	641*	4.93	4	5	5	0.47	2.3027	1.00
2016	02W-18-I	641	0.79	4	5	4	0.43	0.3417	1.00
2016	02W-20-I	641	0.31	4	4	2	0.33	0.1027	1.00
2016	02W-22-I	641	1.13	4	5	4	0.43	0.4896	1.00
2016	02W-24-I	641*	1.78	4	5	4	0.43	0.7713	1.00
2016	03W-06B-I	641*	7.08	6	5	6	0.57	4.0106	1.00
2016	03W-06C-I	641*	9.25	5	5	6	0.53	4.9319	1.00
2016	03W-06D-I	641*	1.26	6	7	5	0.60	0.7546	1.00
2016	03W-06E-I	641*	2.08	5	6	7	0.60	1.2495	1.00
2016	04E-15-I	6415	0.17	3	3	2	0.27	0.0457	1.00
2016	04E-16-I	641	0.97	3	2	2	0.23	0.2266	1.00
2016	04E-18-I	641*	16.53	4	2	4	0.33	5.5099	1.00
2016	04E-30-I	641	0.29	4	2	2	0.27	0.0774	1.00
2016	04E-32-I	641*	2.40	4	4	6	0.47	1.1205	1.00
2016	05E-04-I	643*	2.02	4	4	5	0.43	0.8759	1.00
2016	05E-06A-I	643*	13.80	4	6	6	0.53	7.3588	1.00
2016	05E-06B-I	641*	0.46	4	2	4	0.33	0.1540	1.00
2016	05E-08-I	641*	4.29	4	6	6	0.53	2.2892	1.00
2016	05E-14-I	641*	2.48	4	6	4	0.47	1.1566	1.00
2016	05E-22-I	643	0.57	5	6	4	0.50	0.2831	1.00
2016	05E-34-I	641*	3.50	6	7	7	0.67	2.3341	1.00
2017	02W-34-I	641*	1.94	6	6	5	0.57	1.1011	0.95
2017	02W-42-I	641*	5.83	4	6	4	0.47	2.7219	0.95
2017	03E-58A-I	641*	6.98	4	6	6	0.53	3.7231	0.95
2017	03E-58D-I	641*	1.44	4	4	3	0.37	0.5287	0.95
2017	03E-58E-I	641*	1.55	4	6	6	0.53	0.8291	0.95
2017	03E-72-I	641	0.11	4	4	4	0.40	0.0433	0.95
2017	03E-74A-I	641*	4.48	4	4	4	0.40	1.7926	0.95
2017	03E-74B-I	641*	0.10	4	2	5	0.37	0.0381	0.95

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2017	03E-74D-I	641*	1.28	4	4	4	0.40	0.5127	0.95
2017	03E-84-I	641	0.70	4	4	4	0.40	0.2814	0.95
2017	03E-88-I	641*	7.54	3	2	2	0.23	1.7601	0.95
2017	03E-90A-I	641*	4.04	4	6	5	0.50	2.0223	0.95
2017	03E-90B-I	641*	4.87	4	6	5	0.50	2.4346	0.95
2017	03E-92-I	641	3.54	3	4	4	0.37	1.2967	0.95
2017	03E-94A-I	641*	28.50	4	4	4	0.40	11.4016	0.95
2017	03E-94E-I	641*	3.50	4	6	5	0.50	1.7508	0.95
2017	03E-96-I	641*	1.59	3	5	6	0.47	0.7441	0.95
2017	03E-98-I	641	0.02	3	4	3	0.33	0.0067	0.95
2017	03W-06E-I	641*	8.11	5	6	7	0.60	4.8660	0.95
2017	04E-64-I	641	10.49	3	3	3	0.30	3.1473	0.95
2017	04E-68-I	641	5.30	3	3	4	0.33	1.7683	0.95
2017	06W-74-I	641*	0.34	8	6	6	0.67	0.2287	0.95
2017	08E-02-I	641*	3.97	6	7	7	0.67	2.6471	0.95
2017	08E-12-I	641*	3.55	7	7	7	0.70	2.4884	0.95
2017	08E-34-I	643*	0.21	7	7	7	0.70	0.1466	0.95
2017	08E-36-I	641*	2.53	7	7	7	0.70	1.7698	0.95
2017	08E-82-I	641	0.19	4	4	4	0.40	0.0769	0.95
2017	10E-02-I	641*	4.58	3	3	4	0.33	1.5258	0.95
2017	10E-04-I	641	0.67	4	5	7	0.53	0.3590	0.95
2017	10E-08C-I	641*	1.68	5	4	4	0.43	0.7277	0.95
2017	10E-10-I	641*	6.68	3	4	5	0.40	2.6715	0.95
2017	10E-12-I	641	0.48	3	2	2	0.23	0.1130	0.95
2017	10E-22-I	641*	1.62	5	4	5	0.47	0.7569	0.95
2017	10E-28-I	641*	5.44	3	4	3	0.33	1.8129	0.95
2017	10E-30-I	641	0.50	3	2	2	0.23	0.1157	0.95
2017	10E-32-I	641*	1.28	5	5	7	0.57	0.7248	0.95
2017	10E-40-I	641*	15.85	4	3	2	0.30	4.7539	0.95

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2017	10E-44-I	641	1.19	4	4	3	0.37	0.4367	0.95
2017	10E-47-I	6417	0.05	4	1	5	0.33	0.0156	0.95
2017	10E-52-I	6417	0.20	4	4	5	0.43	0.0846	0.95
2018	01W-16-I	641*	0.68	4	6	5	0.50	0.3397	0.90
2018	01W-18-I	641*	0.12	6	5	6	0.57	0.0684	0.90
2018	01W-20-I	641*	0.02	5	5	4	0.47	0.0116	0.90
2018	02E-16-I	6417*	2.77	3	2	2	0.23	0.6475	0.90
2018	02W-08-I	641*	7.11	4	5	5	0.47	3.3192	0.90
2018	02W-16-I	641	1.73	4	5	3	0.40	0.6904	0.90
2018	02W-18-I	641	3.43	4	5	4	0.43	1.4855	0.90
2018	02W-20-I	641	0.02	4	4	2	0.33	0.0073	0.90
2018	02W-24-I	641*	2.21	4	5	4	0.43	0.9590	0.90
2018	02W-28-I	641	0.78	4	4	4	0.40	0.3121	0.90
2018	02W-33-I	641*	0.12	4	3	2	0.30	0.0359	0.90
2018	02W-34-I	641*	2.94	6	6	5	0.57	1.6662	0.90
2018	02W-36-I	641	4.03	4	3	5	0.40	1.6128	0.90
2018	02W-38-I	641	2.35	4	4	3	0.37	0.8615	0.90
2018	02W-40-I	641	3.38	4	4	3	0.37	1.2388	0.90
2018	02W-74-I	641	0.39	4	2	2	0.27	0.1036	0.90
2018	03E-16-I	6415	1.26	3	4	2	0.30	0.3790	0.90
2018	07W-78-I	641*	2.58	4	5	3	0.40	1.0307	0.90
2018	07W-88-I	641	0.74	4	3	3	0.33	0.2477	0.90
2018	07W-92-I	641	1.75	4	3	2	0.30	0.5252	0.90
2018	07W-94-I	641*	2.31	4	5	6	0.50	1.1526	0.90
2018	07W-98-I	641	0.38	5	5	5	0.50	0.1916	0.90
2018	08E-12-I	641*	27.57	7	7	7	0.70	19.3016	0.90
2018	08E-22-I	643	0.86	7	7	3	0.57	0.4889	0.90
2018	08E-32-I	641*	19.65	8	6	4	0.60	11.7897	0.90
2018	08E-34-I	643*	2.61	7	7	7	0.70	1.8256	0.90

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2018	08E-36-I	641*	0.12	7	7	7	0.70	0.0830	0.90
2018	08E-40-I	641*	13.28	6	5	4	0.50	6.6390	0.90
2018	08E-42-I	641*	5.90	7	7	7	0.70	4.1324	0.90
2018	08E-44-I	641*	2.21	7	5	6	0.60	1.3273	0.90
2018	08E-50B-I	641*	22.00	6	6	5	0.57	12.4684	0.90
2018	08E-60-I	641*	7.97	7	7	6	0.67	5.3121	0.90
2018	08E-66-I	643*	0.04	7	5	7	0.63	0.0262	0.90
2019	02W-52-I	641*	0.73	5	6	6	0.57	0.4154	0.86
2019	02W-60-I	641*	1.14	4	3	2	0.30	0.3423	0.86
2019	03E-06B-I	641*	0.18	4	4	3	0.37	0.0660	0.86
2019	03E-38-I	641	1.69	3	3	5	0.37	0.6188	0.86
2019	08E-46-I	641	1.68	6	6	6	0.60	1.0054	0.86
2019	08E-48-I	641*	15.62	6	6	7	0.63	9.8936	0.86
2019	08E-50B-I	641*	6.24	6	6	5	0.57	3.5347	0.86
2019	08E-56-I	641*	3.04	5	6	4	0.50	1.5184	0.86
2019	08E-58-I	641*	12.80	6	6	6	0.60	7.6792	0.86
2019	08E-60-I	641*	2.20	7	7	6	0.67	1.4657	0.86
2019	08E-66-I	643*	1.13	7	5	7	0.63	0.7160	0.86
2019	11W-58-I	641	2.31	5	6	8	0.63	1.4605	0.86
2020	03E-08-I	641*	0.82	4	4	3	0.37	0.3016	0.82
2020	03E-20-I	641*	5.00	4	4	2	0.33	1.6667	0.82
2020	03E-22-I	641*	1.36	4	2	2	0.27	0.3621	0.82
2020	03E-24-I	641	1.99	4	6	6	0.53	1.0602	0.82
2020	03E-26-I	6415	0.26	3	2	2	0.23	0.0615	0.82
2020	03E-32-I	641*	1.14	4	4	3	0.37	0.4177	0.82
2020	03E-44-I	641*	2.09	4	4	7	0.50	1.0427	0.82
2020	03E-48-I	641*	0.83	4	5	3	0.40	0.3309	0.82
2020	03E-56-I	641*	0.64	4	3	4	0.37	0.2363	0.82
2020	03E-58A-I	641*	9.28	4	6	6	0.53	4.9511	0.82

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2020	03E-58C-I	641	0.51	4	4	3	0.37	0.1875	0.82
2020	03E-58D-I	641*	0.38	4	4	3	0.37	0.1405	0.82
2020	03E-58E-I	641*	0.07	4	6	6	0.53	0.0368	0.82
2020	03E-60-I	641	0.53	4	3	4	0.37	0.1926	0.82
2020	03E-62-I	641	0.37	4	3	4	0.37	0.1343	0.82
2020	03E-64-I	641	0.44	4	4	4	0.40	0.1772	0.82
2020	03E-66-I	641	0.03	4	2	2	0.27	0.0086	0.82
2020	04E-08-I	641*	2.34	4	4	5	0.43	1.0119	0.82
2020	04E-26-I	641*	2.62	5	3	3	0.37	0.9617	0.82
2020	04E-36-I	641*	0.35	5	6	7	0.60	0.2127	0.82
2020	05E-14-I	641*	1.47	4	6	4	0.47	0.6849	0.82
2020	10W-64-I	641	0.69	3	7	7	0.57	0.3914	0.82
2020	11W-28-I	641*	5.36	6	5	7	0.60	3.2153	0.82
2020	11W-30-I	641*	3.11	5	6	6	0.57	1.7634	0.82
2020	11W-44-I	641*	10.92	5	6	6	0.57	6.1899	0.82
2020	11W-58-I	641	0.74	5	6	8	0.63	0.4659	0.82
2021	04E-15-I	6415	0.09	3	3	2	0.27	0.0246	0.78
2021	04E-18-I	641*	5.67	4	2	4	0.33	1.8914	0.78
2021	04E-26-I	641*	5.04	5	3	3	0.37	1.8471	0.78
2021	04E-36-I	641*	2.96	5	6	7	0.60	1.7774	0.78
2021	05E-10-I	641*	5.63	3	5	5	0.43	2.4394	0.78
2021	05E-14-I	641*	3.77	4	6	4	0.47	1.7593	0.78
2021	10W-46-I	641*	18.31	4	5	7	0.53	9.7653	0.78
2021	10W-52D-I	641*	1.44	7	7	8	0.73	1.0552	0.78
2021	10W-58-I	641	0.55	3	6	5	0.47	0.2574	0.78
2021	11W-28-I	641*	0.42	6	5	7	0.60	0.2507	0.78
2022	03W-36-I	641*	0.60	4	3	4	0.37	0.2215	0.74
2022	03W-38A-I	641*	15.01	4	5	6	0.50	7.5063	0.74
2022	10W-05-I	641	0.08	4	2	2	0.27	0.0217	0.74

Table 7(H) Functional Loss by Year for Herbaceous Wetlands									
Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2022	10W-09-I	6415	0.24	4	2	2	0.27	0.0633	0.74
2022	10W-18-I	641	0.80	4	2	3	0.30	0.2400	0.74
2022	10W-24-I	641*	0.84	8	8	7	0.77	0.6462	0.74
2023	03W-02-I	641	4.33	5	6	7	0.60	2.5971	0.70
2023	03W-14-I	641*	6.12	4	5	5	0.47	2.8578	0.70
2023	03W-38A-I	641*	5.70	4	5	6	0.50	2.8491	0.70
2023	03W-40-I	641*	4.30	4	6	7	0.57	2.4365	0.70
2023	03W-42-I	641*	2.12	4	6	5	0.50	1.0577	0.70
2024	03W-26-I	641*	12.56	5	7	6	0.60	7.5386	0.66
2024	10W-04-I	641*	2.62	4	2	3	0.30	0.7849	0.66
2025	06W-80-I	643*	0.67	8	4	6	0.60	0.4013	0.63
2025	06W-82-I	643*	1.95	7	4	6	0.57	1.1046	0.63
2025	07W-04-I	643*	1.75	4	4	5	0.43	0.7564	0.63
2025	07W-10-I	641*	4.34	4	5	5	0.47	2.0262	0.63
2025	07W-16-I	643*	1.53	6	7	7	0.67	1.0176	0.63
2025	07W-28-I	641*	0.57	4	2	2	0.27	0.1509	0.63
2025	07W-36-I	641	2.56	5	7	6	0.60	1.5351	0.63
2025	07W-38-I	641*	2.86	4	4	5	0.43	1.2405	0.63
2025	08E-12-I	641*	1.74	7	7	7	0.70	1.2181	0.63
2025	08E-30-I	641*	1.08	6	5	5	0.53	0.5751	0.63
2025	08E-40-I	641*	1.63	6	5	4	0.50	0.8150	0.63
2026	06W-14-I	641*	6.07	4	7	7	0.60	3.6405	0.59
2026	06W-28-I	641*	18.10	8	6	7	0.70	12.6688	0.59
2026	06W-38-I	643*	1.84	8	6	6	0.67	1.2244	0.59
2026	06W-44-I	641*	7.08	8	5	8	0.70	4.9544	0.59
2026	06W-56-I	641*	9.93	8	5	7	0.67	6.6216	0.59
2026	06W-58-I	641*	15.05	8	6	5	0.63	9.5304	0.59
2026	06W-74-I	641*	3.64	8	6	6	0.67	2.4269	0.59
2026	06W-80-I	643*	1.39	8	4	6	0.60	0.8344	0.59

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USA T-fac
2027	01W-100A-I	641*	1.88	5	6	6	0.57	1.0676	0.56
2027	01W-48-I	641*	9.53	5	5	3	0.43	4.1285	0.56
2027	01W-56-I	641*	13.69	4	4	5	0.43	5.9335	0.56
2027	01W-72-I	641*	0.86	4	3	2	0.30	0.2571	0.56
2027	01W-76-I	641*	0.20	4	3	2	0.30	0.0609	0.56
2027	01W-90-I	641	3.51	5	3	4	0.40	1.4039	0.56
2027	02W-56C-I	641*	3.02	4	4	4	0.40	1.2070	0.56
2027	12W-04-I	641	0.21	4	4	5	0.43	0.0902	0.56
2027	12W-34-I	643*	0.79	6	4	6	0.53	0.4205	0.56
2028	01W-20-I	641*	2.78	5	5	4	0.47	1.2984	0.52
2028	01W-48-I	641*	0.00	5	5	3	0.43	0.0004	0.52
2030	01W-06-I	643*	0.28	7	6	7	0.67	0.1852	0.46
2030	01W-18-I	641*	15.75	6	5	6	0.57	8.9264	0.46
2030	01W-20-I	641*	5.15	5	5	4	0.47	2.4039	0.46
2030	01W-26-I	641*	16.24	7	6	5	0.60	9.7433	0.46
2030	01W-30-I	641*	2.87	7	6	7	0.67	1.9165	0.46
2030	01W-36-I	643*	2.05	4	6	5	0.50	1.0254	0.46
2030	01W-38-I	641*	4.48	7	6	6	0.63	2.8367	0.46
2030	01W-44-I	641*	5.56	7	5	5	0.57	3.1479	0.46
2030	01W-48-I	641*	5.29	5	5	3	0.43	2.2925	0.46
2030	01W-52-I	641	1.57	4	4	4	0.40	0.6265	0.46
2030	01W-56-I	641*	21.63	4	4	5	0.43	9.3709	0.46
2031	01W-30-I	641*	1.31	7	6	7	0.67	0.8763	0.43
2031	06W-14-I	641*	1.42	4	7	7	0.60	0.8501	0.43
Total			777.50						

*This represents the predominant habitat type within each Assessment Area. Where they exist, minor habitat types within a Area are listed on the specific UMAM data sheet.

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USAG T-factor
2016	03W-06A-I	630*	3.46	5	4	7	0.53	1.8479	1.000
2016	03W-06F-I	617*	3.68	6	6	8	0.67	2.4556	1.000
2016	04E-50-I	617	0.06	5	5	4	0.47	0.0276	1.000
2016	05E-02-I	617*	62.92	6	6	6	0.60	37.7498	1.000
2016	05E-12-I	618*	0.22	4	6	5	0.50	0.1077	1.000
2016	05E-32-I	617*	11.42	7	7	6	0.67	7.6144	1.000
2017	02W-10-I	630*	1.45	7	6	4	0.57	0.8238	0.954
2017	03E-74E-I	617*	0.97	3	2	4	0.30	0.2908	0.954
2017	03W-06F-I	617*	5.56	6	6	8	0.67	3.7039	0.954
2017	05E-40-I	617*	22.46	6	6	7	0.63	14.2272	0.954
2017	05W-38-I	630*	1.78	5	6	7	0.60	1.0671	0.954
2017	08E-10-I	617*	1.72	7	6	7	0.67	1.1437	0.954
2017	10E-14-I	617*	2.17	5	5	6	0.53	1.1550	0.954
2017	10E-18-I	617*	0.85	6	2	6	0.47	0.3982	0.954
2017	10E-20A-I	617*	7.10	5	4	6	0.50	3.5481	0.954
2017	10E-20B-I	630*	0.35	5	2	6	0.43	0.1500	0.954
2017	10E-45-I	617*	0.47	4	1	5	0.33	0.1553	0.954
2017	10E-46-I	617	1.70	4	2	5	0.37	0.6229	0.954
2017	10E-49-I	617*	0.28	4	1	5	0.33	0.0931	0.954
2018	01W-04-I	617*	0.02	6	4	7	0.57	0.0113	0.909
2018	02E-02-I	617	0.11	3	3	3	0.30	0.0322	0.909
2018	02E-04-I	617*	33.38	4	3	4	0.37	12.2379	0.909
2018	02E-10-I	617	12.68	4	3	4	0.37	4.6495	0.909
2018	02W-44-I	630*	0.54	5	5	7	0.57	0.3061	0.909
2018	02W-56A	617	0.02	4	7	7	0.60	0.0110	0.909
2018	02W-62-I	613*	0.49	4	6	6	0.53	0.2620	0.909
2018	02W-78-I	611*	1.61	4	4	6	0.47	0.7496	0.909
2018	03E-06A-I	617*	7.78	4	5	7	0.53	4.1513	0.909

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USAC T-factor
2018	07W-68-I	617	0.00	6	4	5	0.50	0.0003	0.909
2018	07W-80-I	626*	1.79	4	5	4	0.43	0.7749	0.909
2018	07W-86-I	626*	7.06	4	4	7	0.50	3.5285	0.909
2018	08E-20-I	630*	0.17	5	4	3	0.40	0.0693	0.909
2018	08E-50C-I	627*	1.47	7	6	7	0.67	0.9820	0.909
2019	02W-44-I	630*	0.83	5	5	7	0.57	0.4680	0.866
2019	02W-62-I	613*	0.04	4	6	6	0.53	0.0198	0.866
2019	03E-06A-I	617*	37.37	4	5	7	0.53	19.9307	0.866
2019	03W-34B-D	617	0.72	7	7	7	0.70	0.5052	0.866
2019	03W-34-D	617	0.17	7	7	7	0.70	0.1209	0.866
2019	08E-50C-I	627*	12.33	7	6	7	0.67	8.2214	0.866
2020	03E-02-I	617*	8.07	4	4	3	0.37	2.9590	0.824
2020	03E-06A-I	617*	0.09	4	5	7	0.53	0.0481	0.824
2020	03E-46-I	617*	2.72	4	6	6	0.53	1.4522	0.824
2020	04E-06-I	617*	1.74	4	2	6	0.40	0.6941	0.824
2020	05E-12-I	618*	5.41	4	6	5	0.50	2.7039	0.824
2020	10W-40-I	630*	10.42	6	6	5	0.57	5.9070	0.824
2020	10W-52B-I	630*	7.29	7	7	8	0.73	5.3482	0.824
2020	10W-52E-I	613*	3.32	7	7	8	0.73	2.4315	0.824
2020	10W-60-I	630*	0.38	6	7	8	0.70	0.2672	0.824
2020	11W-56-I	630	0.73	5	6	6	0.57	0.4110	0.824
2021	03E-02-I	617*	8.49	4	4	3	0.37	3.1133	0.783
2021	05E-12-I	618*	17.93	4	6	5	0.50	8.9650	0.783
2021	10W-22-I	626*	1.88	8	8	7	0.77	1.4444	0.783
2021	10W-26-I	617*	2.58	8	8	8	0.80	2.0620	0.783
2021	10W-28-I	617	0.64	8	8	7	0.77	0.4917	0.783
2021	10W-36-I	630*	3.41	7	6	7	0.67	2.2722	0.783
2021	10W-38-I	630*	5.60	4	6	7	0.57	3.1733	0.783

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USAC T-fact
2021	10W-40-I	630*	5.43	6	6	5	0.57	3.0796	0.783
2021	10W-42-I	617*	1.00	8	8	7	0.77	0.7658	0.783
2021	10W-52A-I	617	0.80	7	7	8	0.73	0.5841	0.783
2021	10W-52B-I	630*	26.09	7	7	8	0.73	19.1354	0.783
2021	10W-52C-I	617*	9.40	7	7	8	0.73	6.8960	0.783
2021	10W-52E-I	613*	1.26	7	7	8	0.73	0.9267	0.783
2021	10W-60-I	630*	0.21	6	7	8	0.70	0.1460	0.783
2022	03W-46-I	617*	2.35	5	6	7	0.60	1.4073	0.743
2022	03W-48-I	630*	0.01	5	5	7	0.57	0.0042	0.743
2022	10W-20-I	617	2.15	5	5	7	0.57	1.2207	0.743
2022	10W-26-I	617*	0.96	8	8	8	0.80	0.7658	0.743
2022	10W-28-I	617	0.00	8	8	7	0.77	0.0001	0.743
2022	10W-32-I	630	0.70	8	6	7	0.70	0.4912	0.743
2022	10W-36-I	630*	1.72	7	6	7	0.67	1.1478	0.743
2022	10W-38-I	630*	0.02	4	6	7	0.57	0.0112	0.743
2023	03W-48-I	630*	0.54	5	5	7	0.57	0.3064	0.705
2024	03W-30-I	626*	1.05	5	6	4	0.50	0.5262	0.667
2025	06W-20-I	630*	0.63	8	4	5	0.57	0.3552	0.631
2025	07W-14-I	617*	0.92	6	6	7	0.63	0.5807	0.631
2025	07W-24-I	617*	0.67	7	5	6	0.60	0.4018	0.631
2025	07W-32-I	617*	6.59	6	7	7	0.67	4.3918	0.631
2025	07W-33-I	617*	0.27	6	6	7	0.63	0.1730	0.631
2025	07W-40-I	617*	0.79	7	7	7	0.70	0.5499	0.631
2025	08E-20-I	630*	0.40	5	4	3	0.40	0.1616	0.631
2026	05E-02-I	617*	6.80	6	6	6	0.60	4.0811	0.596
2026	06W-06A-I	626*	1.00	7	6	6	0.63	0.6357	0.596
2026	06W-18-I	617*	0.20	5	7	7	0.63	0.1239	0.596
2026	06W-26-I	630*	0.85	8	6	8	0.73	0.6208	0.596

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USAC T-factor
2026	06W-34-I	626*	0.53	7	4	7	0.60	0.3201	0.596
2026	06W-36-I	626*	5.04	7	7	6	0.67	3.3577	0.596
2026	06W-46-I	617*	1.59	7	6	7	0.67	1.0610	0.596
2026	06W-54-I	630*	0.45	8	5	7	0.67	0.3009	0.596
2026	06W-56B-I	630*	2.79	8	5	7	0.67	1.8608	0.596
2027	01W-100B	617	0.12	5	4	6	0.50	0.0578	0.562
2027	01W-46-I	617	0.00	7	4	6	0.57	0.0002	0.562
2027	01W-68-I	614*	1.29	5	3	5	0.43	0.5575	0.562
2027	01W-92-I	617*	0.28	4	4	6	0.47	0.1290	0.562
2027	06W-06A-I	626*	0.81	7	6	6	0.63	0.5130	0.562
2030	01W-04-I	617*	1.97	6	4	7	0.57	1.1176	0.465
2030	01W-08-I	630*	0.67	7	6	6	0.63	0.4266	0.465
2030	01W-28-I	630*	0.91	6	6	6	0.60	0.5462	0.465
2030	01W-40-I	617*	0.79	7	6	7	0.67	0.5259	0.465
2030	01W-42-I	617*	0.70	8	5	5	0.60	0.4209	0.465
2031	01W-14-I	630*	0.94	7	5	7	0.63	0.5952	0.435
2031	06W-06A-I	626*	1.10	7	6	6	0.63	0.6992	0.435
Total			420.67						

*This represents the predominant habitat type within each Assessment Area. Where they exist, minor habitat types with Assessment Area are listed on the specific UMAM data sheet.

Table 8: Herbaceous Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG	USACE T factor	T-Adj
2017	2020	R-03W-04-641	641	41.88	6	7	7	0.67	27.92	1.25	0.5333	0.9292	0.
2017	2020	R-04E-06-641	641	20.18	6	6	7	0.63	12.78	1.25	0.5067	0.9292	0.
2017	2020	R-04E-18-641	641	4.29	6	6	7	0.63	2.72	1.25	0.5067	0.9292	0.
2017	2020	R-05-06-641	641	1.96	6	6	7	0.63	1.24	1.25	0.5067	0.9292	0.
2018	2021	R-03E-02-641	641	4.13	7	6	7	0.67	2.76	1.25	0.5333	0.8853	0.
2018	2021	R-03E-02-641a	641	4.14	7	8	7	0.73	3.04	1.25	0.5867	0.8853	0.
2018	2021	R-03E-02-641b	641	56.16	6	7	7	0.67	37.44	1.25	0.5333	0.8853	0.
2018	2021	R-03W-12-641	641	1.45	6	7	7	0.67	0.97	1.25	0.5333	0.8853	0.
2018	2021	R-03W-20-641	641	4.88	6	7	7	0.67	3.26	1.25	0.5333	0.8853	0.
2018	2021	R-04E-08-641	641	4.15	6	6	7	0.63	2.63	1.25	0.5067	0.8853	0.
2018	2021	R-04E-20-641	641	12.68	6	7	7	0.67	8.45	1.25	0.5333	0.8853	0.
2018	2021	R-04E-22-641	641	6.51	6	6	7	0.63	4.12	1.25	0.5067	0.8853	0.
2018	2021	R-04E-24-641	641	15.79	6	6	7	0.63	10.00	1.25	0.5067	0.8853	0.
2018	2021	R-10E-06-641	641	9.22	6	6	6	0.60	5.53	1.25	0.4800	0.8853	0.
2018	2021	R-03E-02-643	643	21.67	7	8	7	0.73	15.89	1.50	0.4889	0.8853	0.
2018	2021	R-06W-26-641	641	11.98	7	6	7	0.67	7.99	1.25	0.5333	0.8853	0.
2019	2022	R-02W-10-641	641	0.49	6	6	7	0.63	0.31	1.25	0.5067	0.8427	0.
2019	2022	R-02W-22-641	641	5.38	7	7	7	0.70	3.77	1.25	0.5600	0.8427	0.
2019	2022	R-07W-24-641	641	50.59	6	7	7	0.67	33.73	1.25	0.5333	0.8427	0.
2019	2022	R-07W-28-641	641	0.39	6	7	7	0.67	0.26	1.25	0.5333	0.8427	0.
2020	2023	TB151	640	7.59	6	6	7	0.63	4.80	1.25	0.5067	0.8013	0.
2020	2023	R-02W-10-641	641	1.18	6	6	7	0.63	0.75	1.25	0.5067	0.8013	0.
2020	2023	R-02W-16-641	641	1.64	7	7	7	0.70	1.15	1.25	0.5600	0.8013	0.
2020	2023	R-03W-28-641	641	4.22	7	7	7	0.70	2.95	1.25	0.5600	0.8013	0.
2020	2023	R-03W-42-641	641	0.76	7	6	7	0.67	0.50	1.25	0.5333	0.8013	0.
2020	2023	R-11W-10-641	641	16.55	7	8	7	0.73	12.14	1.25	0.5867	0.8013	0.
2021	2024	R-11W-04-641	641	1.09	7	7	7	0.70	0.77	1.25	0.5600	0.7612	0.
2021	2024	R-11W-06-641	641	22.41	7	7	7	0.70	15.68	1.25	0.5600	0.7612	0.
2021	2024	R-11W-04-643	643	1.40	7	7	7	0.70	0.98	1.50	0.4667	0.7612	0.
2022	2025	R-03E-02-641b	641	92.91	6	7	7	0.67	61.94	1.25	0.5333	0.7222	0.
2022	2025	R-04E-06-641	641	5.89	6	6	7	0.63	3.73	1.25	0.5067	0.7222	0.
2022	2025	R-04E-12-641	641	6.20	6	7	7	0.67	4.13	1.25	0.5333	0.7222	0.
2022	2025	R-05-04-641	641	8.81	6	6	7	0.63	5.58	1.25	0.5067	0.7222	0.
2022	2025	R-03E-02-643a	643	2.01	7	8	7	0.73	1.47	1.50	0.4889	0.7222	0.
2022	2025	R-03E-02-643b	643	7.85	7	8	7	0.73	5.76	1.50	0.4889	0.7222	0.
2022	2025	R-05-04-643	643	7.64	6	6	7	0.63	4.84	1.50	0.4222	0.7222	0.
2024	2027	R-03W-02-641	641	4.34	6	6	6	0.60	2.60	1.25	0.4800	0.6476	0.
2024	2027	R-03W-06-641	641	7.55	6	6	6	0.60	4.53	1.25	0.4800	0.6476	0.
2024	2027	R-03W-08-641	641	2.89	6	7	7	0.67	1.93	1.25	0.5333	0.6476	0.
2024	2027	R-03W-14-641	641	6.10	6	7	7	0.67	4.07	1.25	0.5333	0.6476	0.
2024	2027	R-03W-18-641	641	1.87	7	7	7	0.70	1.31	1.25	0.5600	0.6476	0.
2024	2027	R-03W-50-641	641	1.73	7	8	7	0.73	1.27	1.25	0.5867	0.6476	0.
2025	2028	R-03W-22-641	641	8.02	7	7	7	0.70	5.61	1.25	0.5600	0.6119	0.
2025	2028	R-03W-24-641	641	1.00	7	7	7	0.70	0.70	1.25	0.5600	0.6119	0.

Table 8: Herbaceous Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG	USACE T factor	T-Adj
2025	2028	R-03W-30-641	641	6.34	6	6	7	0.63	4.02	1.25	0.5067	0.6119	0.
2025	2028	R-03W-32-641	641	7.51	6	7	7	0.67	5.01	1.25	0.5333	0.6119	0.
2025	2028	R-03W-36-641	641	12.30	7	8	7	0.73	9.02	1.25	0.5867	0.6119	0.
2026	2029	R-06W-28-641	641	7.53	8	7	7	0.73	5.52	1.25	0.5867	0.5773	0.
2026	2029	R-07W-04-641	641	7.69	8	7	7	0.73	5.64	1.25	0.5867	0.5773	0.
2026	2029	R-07W-18-641	641	1.92	8	7	7	0.73	1.41	1.25	0.5867	0.5773	0.
2026	2029	R-08E-01-641	641	9.34	7	6	7	0.67	6.23	1.25	0.5333	0.5773	0.
2026	2029	R-08E-06-641	641	16.06	7	6	7	0.67	10.71	1.25	0.5333	0.5773	0.
2026	2029	R-07W-18-643	643	3.42	8	7	7	0.73	2.51	1.50	0.4889	0.5773	0.
2027	2030	R-06W-12-641	641	5.47	7	6	7	0.67	3.65	1.25	0.5333	0.5436	0.
2028	2031	R-01W-34-641	641	0.20	8	7	7	0.73	0.15	1.25	0.5867	0.5110	0.
2028	2031	R-01W-44-641	641	3.54	8	7	7	0.73	2.60	1.25	0.5867	0.5110	0.
2028	2031	R-01W-50-641	641	7.86	8	7	7	0.73	5.76	1.25	0.5867	0.5110	0.
2028	2031	R-01W-56-641	641	3.71	7	7	7	0.70	2.60	1.25	0.5600	0.5110	0.
2028	2031	R-02W-14-641	641	5.31	7	7	7	0.70	3.72	1.25	0.5600	0.5110	0.
2028	2031	R-06W-12-641	641	3.37	7	6	7	0.67	2.25	1.25	0.5333	0.5110	0.
2028	2031	R-11W-14-641	641	3.71	7	8	7	0.73	2.72	1.25	0.5867	0.5110	0.
2028	2031	R-12W-04-641	641	4.12	8	8	7	0.77	3.16	1.25	0.6133	0.5110	0.
2028	2031	R-12W-06-641	641	1.40	7	8	7	0.73	1.03	1.25	0.5867	0.5110	0.
2028	2031	R-12W-12-641	641	1.13	7	8	7	0.73	0.83	1.25	0.5867	0.5110	0.
2028	2031	R-12W-14-641	641	0.79	7	8	7	0.73	0.58	1.25	0.5867	0.5110	0.
2029	2032	R-01W-16-641	641	4.11	8	7	7	0.73	3.02	1.25	0.5867	0.4793	0.
2029	2032	R-02W-02-641	641	6.89	6	6	7	0.63	4.36	1.25	0.5067	0.4793	0.
2031	2034	R-01W-02-641	641	18.32	6	6	7	0.63	11.60	1.25	0.5067	0.4186	0.
2031	2034	R-01W-05-641	641	2.39	8	8	7	0.77	1.83	1.25	0.6133	0.4186	0.
2031	2034	R-01W-06-641	641	5.26	7	6	7	0.67	3.51	1.25	0.5333	0.4186	0.
2031	2034	R-01W-08-641	641	6.55	7	7	7	0.70	4.59	1.25	0.5600	0.4186	0.
2031	2034	R-01W-09-641	641	3.63	8	8	7	0.77	2.78	1.25	0.6133	0.4186	0.
2031	2034	R-01W-12-641	641	1.57	8	7	7	0.73	1.15	1.25	0.5867	0.4186	0.
2031	2034	R-01W-18-641	641	14.80	8	7	7	0.73	10.85	1.25	0.5867	0.4186	0.
2031	2034	R-01W-20-641	641	21.80	8	7	7	0.73	15.99	1.25	0.5867	0.4186	0.
2031	2034	R-01W-21-641	641	3.52	7	7	7	0.70	2.46	1.25	0.5600	0.4186	0.
2031	2034	R-01W-02-643	643	9.26	6	6	7	0.63	5.86	1.50	0.4222	0.4186	0.
2031	2034	R-01W-20-643	643	13.51	8	7	7	0.73	9.91	1.50	0.4889	0.4186	0.
2032	2035	R-01W-05-641	641	1.31	8	8	7	0.77	1.01	1.25	0.6133	0.3896	0.
2032	2035	R-01W-08-641	641	9.74	7	7	7	0.70	6.82	1.25	0.5600	0.3896	0.
Total				734.98									

Table 8: Forested Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG
2018	2033	R-03E-02-617a	617	7.02	7	7	7	0.70	4.92	1.50	0.47
2018	2033	R-10E-02-617	617	4.58	6	6	7	0.63	2.90	1.50	0.42
2018	2033	R-03E-02-626	626	15.29	7	8	7	0.73	11.21	1.50	0.49
2018	2033	R-10E-12-626	626	4.85	6	6	7	0.63	3.07	1.50	0.42
2018	2033	R-03E-02-630a	630	6.84	7	6	7	0.67	4.56	1.50	0.44
2018	2033	R-10E-02-630	630	8.80	6	6	7	0.63	5.57	1.50	0.42
2018	2033	R-10E-08-630	630	15.96	6	6	7	0.63	10.11	1.50	0.42
2019	2034	R-02W-18-630	630	1.61	6	6	7	0.63	1.02	1.50	0.42
2019	2034	R-07W-32-630	630	9.36	6	7	7	0.67	6.24	1.50	0.44
2019	2034	R-07W-36-630	630	0.74	6	7	7	0.67	0.50	1.50	0.44
2019	2034	R-08E-09-641*	617	23.06	6	6	7	0.63	14.60	1.50	0.42
2019	2034	ST-IS-R24**	610	16.87	5	5	7	0.57	9.56	1.50	0.38
2021	2036	R-11W-06-617	617	15.98	7	7	7	0.70	11.19	1.50	0.47
2022	2037	R-03E-02-617b	617	5.91	7	7	7	0.70	4.14	1.50	0.47
2022	2037	R-03E-02-630b	630	17.68	6	7	7	0.67	11.78	1.50	0.44
2022	2037	DB-IS-R59**	610	27.83	7	6	7	0.67	18.55	1.50	0.44
2023	2038	R-03W-48-611	611	3.45	6	7	7	0.67	2.30	1.75	0.38
2023	2038	R-10W-02-617	617	8.71	7	8	7	0.73	6.39	1.50	0.49
2025	2040	R-03W-38-617	617	2.34	6	7	6	0.63	1.48	1.50	0.42
2026	2041	R-07W-06-616	616	15.52	7	7	7	0.70	10.87	1.50	0.47
2026	2041	R-07W-06-617	617	126.85	7	7	7	0.70	88.79	1.50	0.47
2026	2041	R-07W-14-617	617	6.53	8	7	7	0.73	4.79	1.50	0.49
2026	2041	R-07W-02-630	630	2.56	8	7	7	0.73	1.88	1.50	0.49
2026	2041	R-07W-10-630	630	0.67	8	7	7	0.73	0.49	1.50	0.49
2027	2042	R-06W-08-617	617	14.09	7	7	7	0.70	9.86	1.50	0.47
2027	2042	R-06W-14-617	617	20.95	7	7	7	0.70	14.67	1.50	0.47
2027	2042	R-06W-18-617	617	2.15	7	6	7	0.67	1.44	1.50	0.44
2027	2042	R-06W-22-617	617	7.58	6	6	7	0.63	4.80	1.50	0.42
2027	2042	R-06W-24-641*	617	14.12	6	6	7	0.63	8.95	1.50	0.42

Table 8: Forested Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG
2027	2042	R-06W-26-617	617	36.79	6	6	7	0.63	23.30	1.50	0.42
2027	2042	R-06W-22-626	626	26.48	6	6	7	0.63	16.77	1.50	0.42
2027	2042	R-06W-22-627	627	11.04	6	6	7	0.63	6.99	1.50	0.42
2027	2042	R-06W-04-630	630	4.44	7	7	7	0.70	3.11	1.50	0.47
2027	2042	R-06W-22-630	630	33.77	6	6	7	0.63	21.39	1.50	0.42
2028	2043	R-01W-54-613	613	4.04	8	7	7	0.73	2.96	1.50	0.49
2028	2043	R-06W-08-617	617	2.44	7	7	7	0.70	1.71	1.50	0.47
2028	2043	R-11W-02-617	617	17.26	7	8	7	0.73	12.66	1.50	0.49
2028	2043	R-12W-08-625	625	4.80	6	6	6	0.60	2.88	1.50	0.40
2028	2043	R-12W-10-625	625	12.70	7	8	7	0.73	9.31	1.50	0.49
2028	2043	R-02W-04-630	630	3.02	7	7	7	0.70	2.11	1.50	0.47
2031	2046	R-01W-07-617	617	0.70	8	8	7	0.77	0.54	1.50	0.51
2031	2046	R-01W-09-617	617	2.56	8	8	7	0.77	1.96	1.50	0.51
2031	2046	R-01W-05-626	626	0.47	8	8	7	0.77	0.36	1.50	0.51
2034	2049	03W-34B-DR	617	0.72	7	8	9	0.80	0.58	1.50	0.53
2034	2049	03W-34-DR	617	0.17	7	8	9	0.80	0.14	1.50	0.53
				Total	524.60						

* Previously proposed as a herbaceous wetland

**Wetlands will be established on the South Pasture Mine

Table 9: Summary of Preservation (With and Without Project) UMAM Values by A

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM	
			Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current
Wetland	12W-57-P	513	5	6	7	4	5	5	3	4	4	0.40	0.5
Wetland	03W-24-P	611	5	6	7	6	7	7	8	9	9	0.63	0.7
Wetland	11W-02A-P	611	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	12W-18-P	616	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	12W-50-P	616	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	12W-62B-P	616	5	6	7	6	7	7	7	8	8	0.60	0.7
Wetland	01W-100B-P	617	5	5	6	5	6	6	7	8	8	0.57	0.6
Wetland	01W-44-P	617	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	01W-46-P	617	5	7	8	5	6	6	7	8	8	0.57	0.7
Wetland	01W-62-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	01W-92-P	617	5	7	8	3	4	4	7	8	8	0.50	0.6
Wetland	02W-44-P	617	5	5	6	5	6	6	8	9	9	0.60	0.6
Wetland	02W-56A-P	617	5	5	6	6	7	7	8	9	9	0.63	0.7
Wetland	02W-56B-P	617	5	6	7	6	7	7	8	9	9	0.63	0.7
Wetland	02W-56C-P	617	5	5	6	6	7	7	5	6	6	0.53	0.6
Wetland	02W-66-P	617	5	6	7	5	6	6	6	7	7	0.53	0.6
Wetland	02W-70-P	617	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	02W-80-P	617	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	02W-81-P	617	5	6	7	5	6	6	8	9	9	0.60	0.7
Wetland	02W-88A-P	617	5	6	7	6	7	7	8	9	9	0.63	0.7
Wetland	03W-04-P	617	5	6	7	4	5	5	8	9	9	0.57	0.6
Wetland	03W-34B-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	03W-34-P	617	5	6	7	7	8	8	8	9	9	0.67	0.7
Wetland	03W-50-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	06W-40-P	617	5	8	9	7	8	8	7	8	8	0.63	0.8
Wetland	06W-42-P	617	5	8	9	7	8	8	8	9	9	0.67	0.8
Wetland	06W-54-P	617	5	8	9	7	8	8	8	9	9	0.67	0.8
Wetland	06W-63-P	617	5	8	9	7	8	8	6	7	7	0.60	0.7
Wetland	06W-65-P	617	5	8	9	7	8	8	6	7	7	0.60	0.7
Wetland	06W-66-P**	617	5	8	9	7	8	8	5	6	6	0.57	0.7
Wetland	06W-77-P	617	5	6	7	5	6	6	3	4	4	0.43	0.5
Wetland	07W-40-P	617	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	07W-54A-P	617	5	6	7	7	8	8	8	9	9	0.67	0.7
Wetland	07W-62-P	617	5	6	7	6	7	7	7	8	8	0.60	0.7
Wetland	07W-64-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	07W-66-P	617	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	07W-68-P	617	5	6	7	5	6	6	8	9	9	0.60	0.7
Wetland	07W-70-P	617	5	6	7	7	8	8	7	8	8	0.63	0.7
Wetland	11W-02C-P	617	5	7	8	6	7	7	8	9	9	0.63	0.7

Mosaic Fertilizer, LLC
South Pasture Extension Hardee County, FL
Compensatory Mitigation and Monitoring Plan

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM	
			Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current
Wetland	11W-02D-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-02H-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-04-P	617	5	8	9	7	8	8	7	8	8	0.63	0.8
Wetland	11W-26-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-34-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-40-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-50-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-53-P	617	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	12W-06-P	617	5	7	8	6	7	7	7	8	8	0.60	0.7
Wetland	12W-32-P	617	5	7	8	5	6	6	7	8	8	0.57	0.7
Wetland	12W-36-P	617	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	12W-38-P	617	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	12W-42-P	617	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	12W-44-P	617	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	12W-52C-P	617	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	12W-54-P	617	5	7	8	6	7	7	6	7	7	0.57	0.7
Wetland	12W-56-P	617	5	8	9	7	8	8	8	9	9	0.67	0.8
Wetland	12W-62A-P	617	5	7	8	7	8	8	7	8	8	0.63	0.7
Wetland	12W-66-P	617	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	12W-69-P	617	5	7	8	6	7	7	7	8	8	0.60	0.7
Wetland	12W-71-P	617	5	7	8	6	7	7	7	8	8	0.60	0.7
Wetland	12W-72-P	617	5	7	8	6	7	7	7	8	8	0.60	0.7
Wetland	12W-74-P**	617	5	7	8	7	8	8	7	8	8	0.63	0.7
Wetland	01W-14-P	630	5	8	9	6	7	7	8	9	9	0.63	0.8
Wetland	01W-68-P	630	5	6	7	6	7	7	6	7	7	0.57	0.6
Wetland	02W-88B-P	630	5	6	7	5	6	6	7	8	8	0.57	0.6
Wetland	02W-88C-P	630	5	7	8	4	5	5	6	7	7	0.50	0.6
Wetland	02W-88D-P	630	5	5	6	4	5	5	6	7	7	0.50	0.5
Wetland	03W-12-P	630	5	5	6	6	7	7	8	9	9	0.63	0.7
Wetland	03W-22-P	630	5	5	6	6	7	7	8	9	9	0.63	0.7
Wetland	03W-48-P	630	5	6	7	7	8	8	8	9	9	0.67	0.7
Wetland	06W-26-P	630	5	8	9	7	8	8	7	8	8	0.63	0.8
Wetland	07W-76-P	630	5	6	7	6	7	7	7	8	8	0.60	0.7
Wetland	11W-10-P	630	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	11W-12-P	630	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	01W-102-P	641	5	6	7	6	7	7	7	8	8	0.60	0.7
Wetland	01W-60-P	641	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	01W-66-P	641	5	6	7	7	8	8	8	9	9	0.67	0.7
Wetland	01W-98-P	641	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	02W-84-P	641	5	5	6	4	5	5	4	5	5	0.43	0.5
Wetland	03W-10-P	641	5	6	7	4	5	5	8	9	9	0.57	0.6
Wetland	06W-62-P	641	5	8	9	7	8	8	6	7	7	0.60	0.7

Mosaic Fertilizer, LLC
 South Pasture Extension Hardee County, FL
 Compensatory Mitigation and Monitoring Plan

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM	
			Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current
Wetland	06W-64-P	641	5	8	9	7	8	8	6	7	7	0.60	0.7
Wetland	07W-46-P	641	5	5	6	5	6	6	5	6	6	0.50	0.5
Wetland	07W-50-P	641	5	6	7	6	7	7	7	8	8	0.60	0.7
Wetland	07W-52-P	641	5	7	8	7	8	8	6	7	7	0.60	0.7
Wetland	07W-74-P**	641	5	6	7	7	8	8	6	7	7	0.60	0.7
Wetland	11W-08A-P	641	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	11W-14-P	641	5	6	7	5	6	6	7	8	8	0.57	0.6
Wetland	11W-16-P**	641	5	5	6	5	6	6	5	6	6	0.50	0.5
Wetland	11W-24-P**	641	5	7	8	5	6	6	7	8	8	0.57	0.7
Wetland	12W-20-P	641	5	7	8	5	6	6	7	8	8	0.57	0.7
Wetland	12W-28-P**	641	5	6	7	6	7	7	8	9	9	0.63	0.7
Wetland	12W-48-P**	641	5	7	8	7	8	8	7	8	8	0.63	0.7
Wetland	12W-64-P	641	5	7	8	5	6	6	6	7	7	0.53	0.6
Wetland	01W-61-P	643	5	7	8	7	8	8	6	7	7	0.60	0.7
Wetland	06W-78-P	643	5	8	9	7	8	8	5	6	6	0.57	0.7
Wetland	11W-38-P**	643	5	7	8	7	8	8	8	9	9	0.67	0.8
Wetland	11W-51-P	643	5	7	8	5	6	6	8	9	9	0.60	0.7
Wetland	12W-51-P	643	5	5	6	7	8	8	3	4	4	0.50	0.5
Wetland	12W-65-P	643	5	7	8	7	8	8	7	8	8	0.63	0.7
Wetland	12W-70-P**	643	5	7	8	7	8	8	7	8	8	0.63	0.7
Wetland	01W-97-P	6417	5	7	8	6	7	7	8	9	9	0.63	0.7
Wetland	12W-68-P**	6417	5	8	9	6	7	7	8	9	9	0.63	0.8

*This represents the predominant habitat type within each Assessment Area. Where they exist, minor habitat types within a given Assessment Area are listed on the specific UMAM Assessment Area ID.

**These UMAM Assessment Areas are in the no-mine area and are non-jurisdictional per the 2012 Rapanos

Table 10: Summary of Enhancement (With and Without Project) UMAM Values

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM Value
			Without Project	Current	With Project	Without Project	Current	With Project	Without Project	Current	With Project	Without Project
Wetland	06W-60-P	617	7	7	9	6	6	8	7	7	8	0.67
Wetland	06W-76-P	617	5	5	8	6	6	8	7	7	8	0.60
Wetland	07W-08-P	617	5	5	8	3	3	8	7	7	8	0.50
Wetland	12W-40-P	617	6	6	9	3	3	8	6	6	8	0.50
Wetland	06W-20-P	641	7	7	9	4	4	8	5	5	8	0.53

Table 11A Existing Streams

NAME	Land Use in 120 foot stream buffer																					
	211	213	215	321	329	330	411	425	427	434	438	513	514	534	611	613	617	618	625	626	630	641
BC-MT-07	0.27			0.01			0.45						0.06							0.27		0.01
BC-MT-08	1.19						0.67			0.27										0.03	0.07	0.03
BC-MT-10	0.02						1.04			0.01											0.08	0.13
BC-MT-12										1.11							0.03				0.76	
BC-MT-15	0.26			0.00			0.34	0.67									0.05					0.16
BC-NC-01	0.55						0.17		0.36	0.66											0.44	0.13
BC-NC-02	1.70			0.18	0.14					0.21							0.97				0.15	0.07
BC-NC-07	0.68												0.05									
BC-NC-08	0.48												0.04									0.12
BC-NC-09	0.35								0.19			0.10	0.00									0.57
BC-NC-10									0.20								0.23					0.09
BC-NC-11	0.82								0.22								0.03					0.12
BC-NC-14	0.53								0.08							0.12	0.05					0.09
BC-NC-15	2.51									0.14												0.16
BC-NE-01	0.26								0.29		0.07		0.01				0.01					
BC-NE-03a	0.57											0.01					0.13					0.06
BC-NE-03b	0.56								0.00								0.12					
BC-NW-01	0.23								0.08	1.33							0.02				0.17	0.10
BC-NW-02						0.24				1.76							0.18				0.10	0.11
BC-NW-03a	1.84			0.15		1.01	0.65			1.49	1.30						0.63				0.56	0.04
BC-NW-06	0.00			0.94																		
BC-NW-07b				0.55			0.08			0.08												
BC-SW-01	1.49				0.69				0.55			0.01					0.12					0.02
BC-SW-02	0.11			0.52			0.61		0.02	0.68							0.22				1.25	0.03
BC-SW-03							1.05			0.38			0.01				0.55				0.25	0.10
BC-SW-04	0.40									0.71							0.29				0.38	
BC-SW-05				0.04						0.25							1.01				0.42	
BC-SW-06								0.05				0.01					1.19					
BC-SW-07				0.41			0.10	0.31		0.23											0.02	
BC-SW-08	1.57																					0.10
LC-EB-01										0.40		0.04									0.23	
LC-EB-02										0.15		0.02									0.44	
LC-EB-03									0.14	0.17							1.29				0.47	
LC-EB-04a	0.42									0.44			0.01								0.20	
LC-EB-04b	0.24								0.08	0.12			0.05									
LC-EB-05	0.23								0.02	0.20			0.02				0.04					
LC-EB-10	0.68			0.58	0.03					0.10												0.08
LC-EB-12	1.33		0.06						0.05		0.03	0.01										0.07
LC-EB-13				0.09					1.19								0.54					

Land Use in 120 foot stream buffer

NAME	211	213	215	321	329	330	411	425	427	434	438	513	514	534	611	613	617	618	625	626	630	641
LC-EB-14									0.39								0.37					
LC-EB-15			0.02	0.04					0.96	0.45		0.02					0.59					0.07
LC-MT-02	0.14			0.23			0.13			1.16									0.34	0.20		0.05
LC-MT-03										0.35												0.08
LC-NB-01									0.09	0.15											0.49	
LC-NB-04										0.37											0.91	0.03
LC-NB-05										0.60							0.22				0.94	0.04
LC-NB-06							0.10		0.15	0.43	0.04						1.47					0.25
LC-NB-07									0.43								0.50			0.02		0.05
LC-NB-08										0.16		0.01									0.58	
LC-NB-10							0.29		0.09	0.38		0.03					1.08			0.12		
TC-EB-01		0.19							0.30			0.03	0.03				0.49					0.14
TC-EB-02	0.28								1.46			0.02					0.97					
TC-EB-03	0.97																	0.00				0.14
TC-EB-04	0.16							0.13									0.50					0.07
TC-EB-05	0.09							0.03	0.27								0.25					
TC-WB-01	0.43	2.15							0.31			0.01	0.04	0.02								0.07
Grand Total	21.37	2.34	0.08	3.74	0.86	1.25	5.67	1.19	7.93	14.95	1.44	0.31	0.32	0.02	0.12	0.05	14.09	0.00	0.34	0.64	8.91	3.35
%	23.3	2.5605	0.1	4.09	0.9	1.4	6.2	1.3	8.7	16.324	1.6	0.3	0.4	0	0.1	0.1	15.4	0	0.4	0.7	9.7	3.7

Stream Segment	Land Use in 120 foot Stream Buffer																		
	211	213	215	321	330	411	425	427	434	438	513	514	534	611	616	617	626	630	640
BC-MT-1	0.08					1.54		0.10	2.35							4.77		8.67	
BC-MT-1-R				0.94		0.04		0.83	0.08									0.05	
BC-MT-11						0.01												0.03	
BC-MT-13																0.19		0.13	
BC-MT-14									0.20							1.02		0.91	
BC-MT-16				0.01			0.26									0.70			
BC-MT-2						0.20										0.72		0.52	
BC-MT-2-R				0.57		0.27		0.20								0.12		0.08	
BC-MT-3	0.19			0.08			0.23		0.74	0.50						3.81			
BC-MT-4				0.05		0.18	0.01		0.59	0.63						4.40			
BC-MT-5				0.16				2.23	0.22							10.42			
BC-MT-6	0.01						0.36	0.34				0.03				4.75			
BC-MT-9									0.01									0.11	
BC-NC-12	0.64			0.40				1.23	0.01								0.10		
BC-NC-13	0.59							1.38	0.03							0.47			
BC-NC-16									0.17										
BC-NC-3	0.48							0.10	0.69	0.32						1.93		1.92	
BC-NC-4																0.76			
BC-NC-4-R				0.13					3.12									0.06	
BC-NC-5								0.30	2.03							0.73		2.62	
BC-NC-6								1.58	0.41							2.92			
BC-NE-1-R				3.35				0.03		0.06						0.02			
BC-NE-2				0.01				0.01		0.04						0.08			
BC-NE-2-R				1.14												0.03			
BC-NE-4				0.07				0.09								0.05			
BC-NE-5								0.02		2.62						0.59			
BC-NE-6								0.58								1.20			
BC-NE-7								0.86					0.04			1.21			
BC-NW-1-R				1.50					0.03										
BC-NW-2-R									1.81										
BC-NW-3-R	0.01								9.19	0.05						0.05			
BC-NW-3b	0.24			0.19					0.49	0.50						0.70			
BC-NW-4									0.12							1.34			
BC-NW-5									0.67							0.99			
BC-NW-7				0.15		0.11										0.23			
LC-EB-1-R								1.11								0.06		0.13	
LC-EB-11	0.02							0.05	0.19							0.43			
LC-EB-16								0.05	0.03							0.80			
LC-EB-6	0.01								1.47							1.63		0.05	
LC-EB-7				0.06					0.50							1.72			
LC-EB-8	0.05							0.04	0.09							1.04			
LC-EB-9	0.34	0.08						0.29		0.19						3.56			
LC-MT-1								1.40								4.15			
LC-NB-1-R									0.36										
LC-NB-2						0.53		0.21	1.72						0.12	0.93		1.38	
LC-NB-3	0.03	0.57		0.21				1.80	0.28			0.04				5.99			





LC-NB-4-R									2.47							0.36			
LC-NB-5-R									1.36							0.22			
LC-NB-9									0.19		0.02					0.13		0.66	
TB-EB-1-R				2.29															
TB-WB-3-R				1.10														0.04	
Grand Total	2.69	0.65	0.00	12.41	0.00	2.88	0.86	14.83	31.62	4.91	0.02	0.07	0.04	0.00	0.12	65.22	0.10	17.36	0.00
%	1.71	0.41	0.00	7.90	0.00	1.83	0.55	9.44	20.12	3.12	0.01	0.04	0.03	0.00	0.08	41.49	0.06	11.04	0.00



Feet
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1 in = 3,000 feet

**MOSAIC FERTILIZER, LLC.
SOUTH PASTURE EXTENSION**

HARDEE COUNTY, FLORIDA




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-  South Pasture Mine
-  South Pasture Extension
-  No Mine Boundary



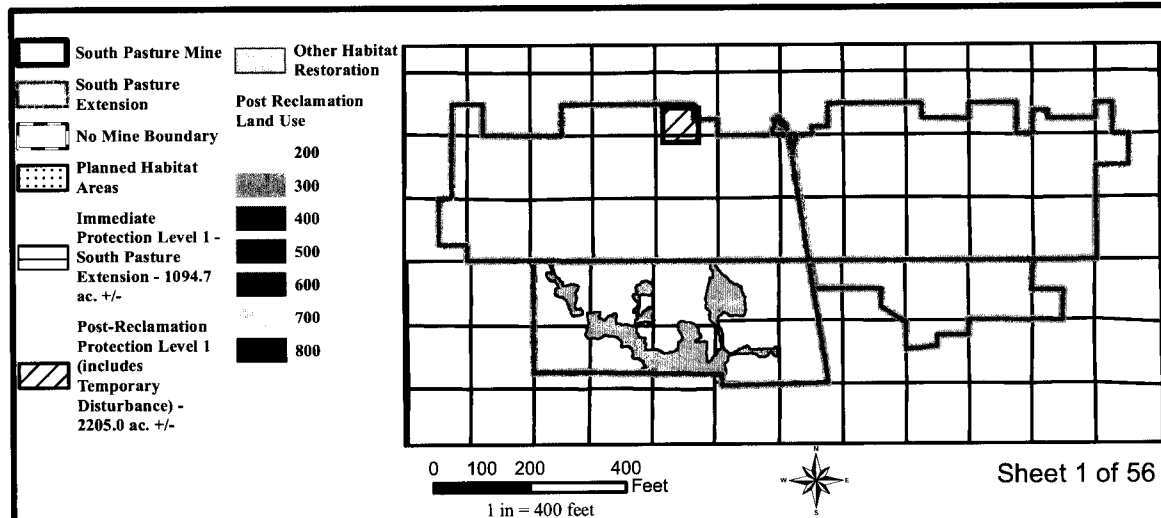
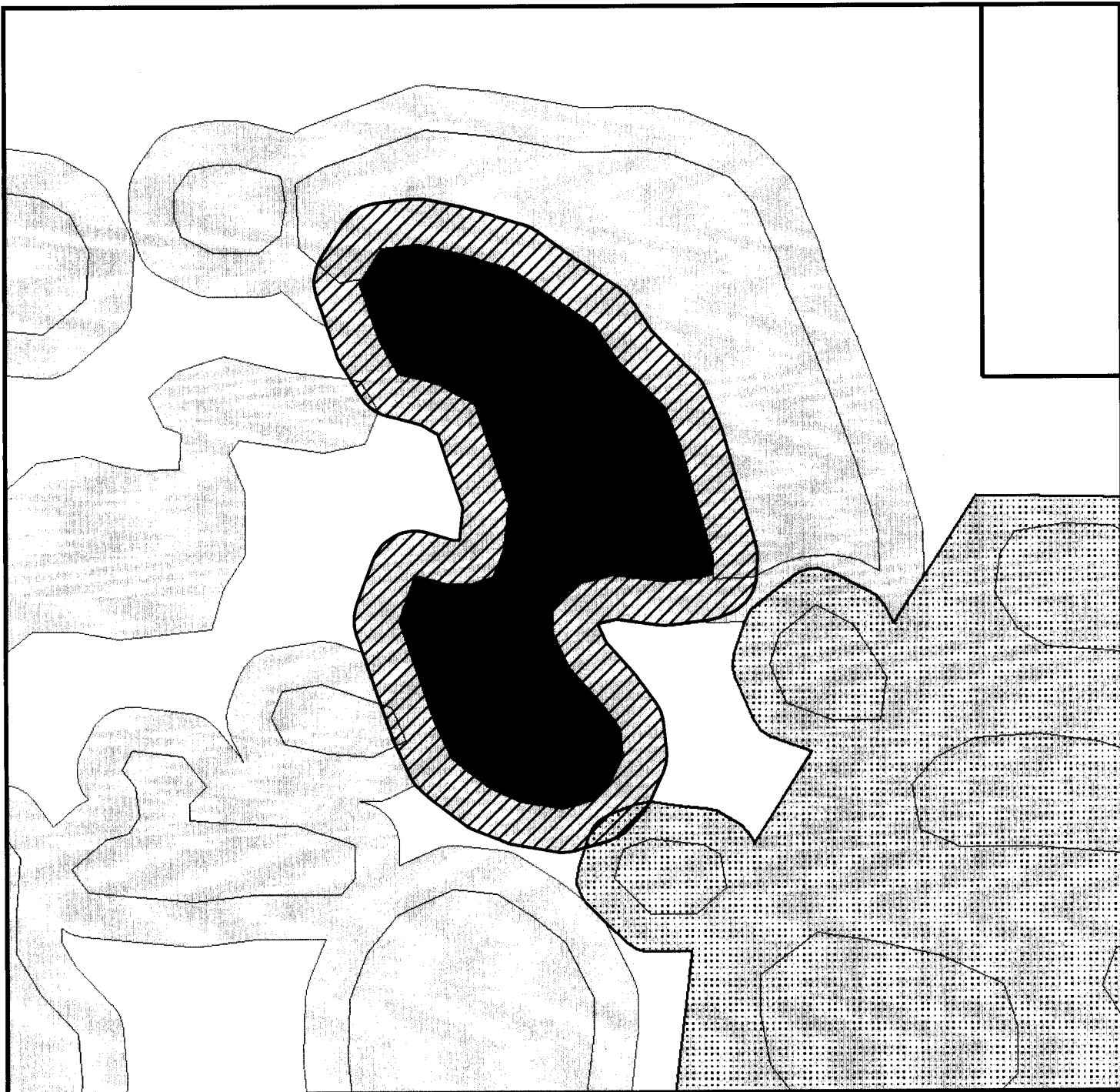
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**MOSAIC FERTILIZER, LLC.
SOUTH PASTURE EXTENSION**

HARDEE COUNTY, FLORIDA

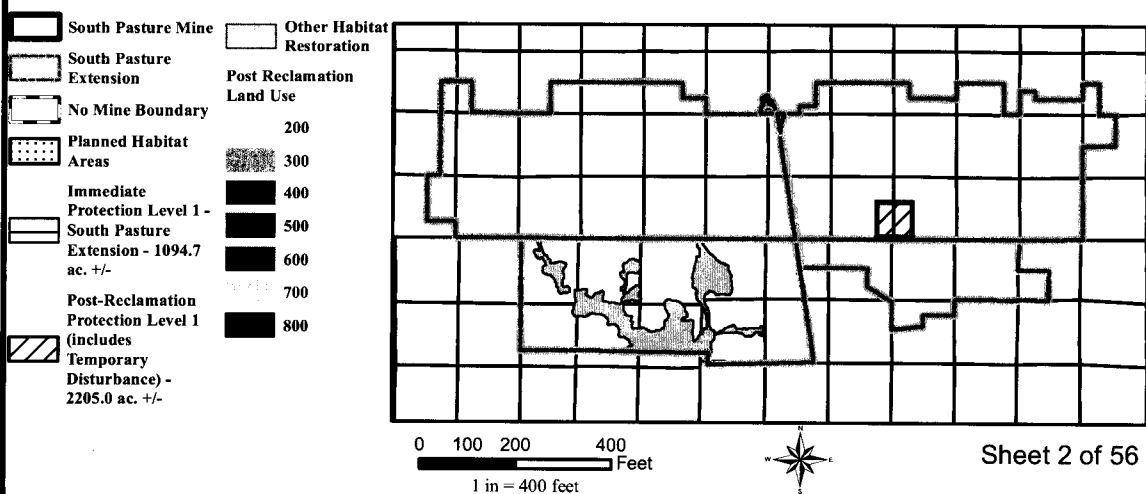
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-  South Pasture Mine
-  No Mine Boundary

Source: Dec. 2014 Mosaic Imagery

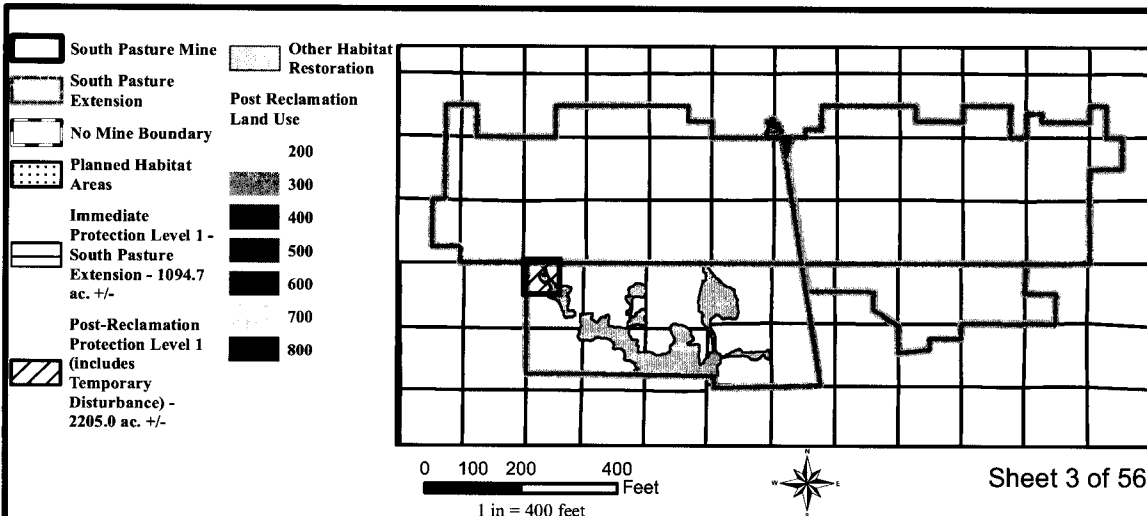
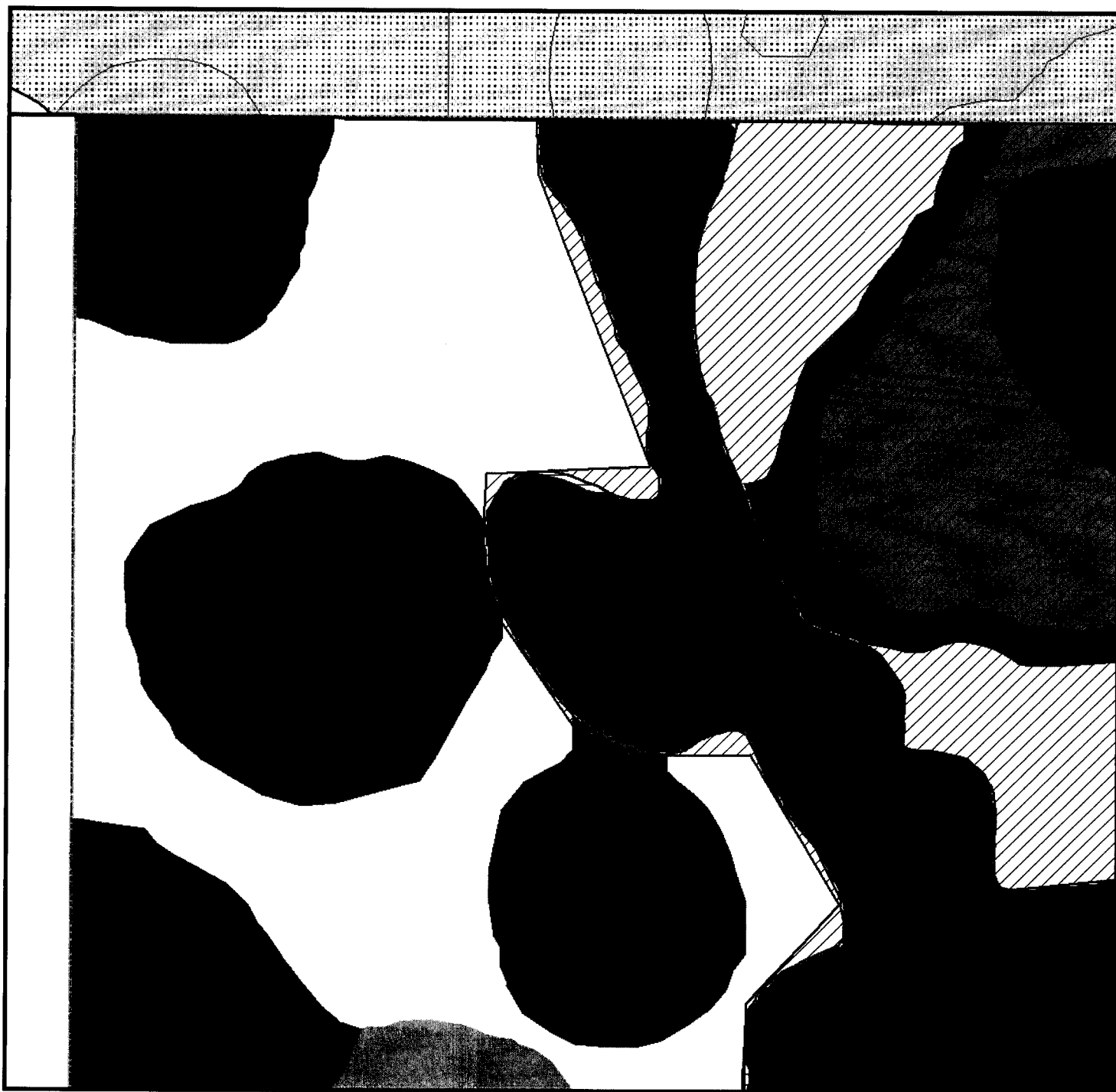


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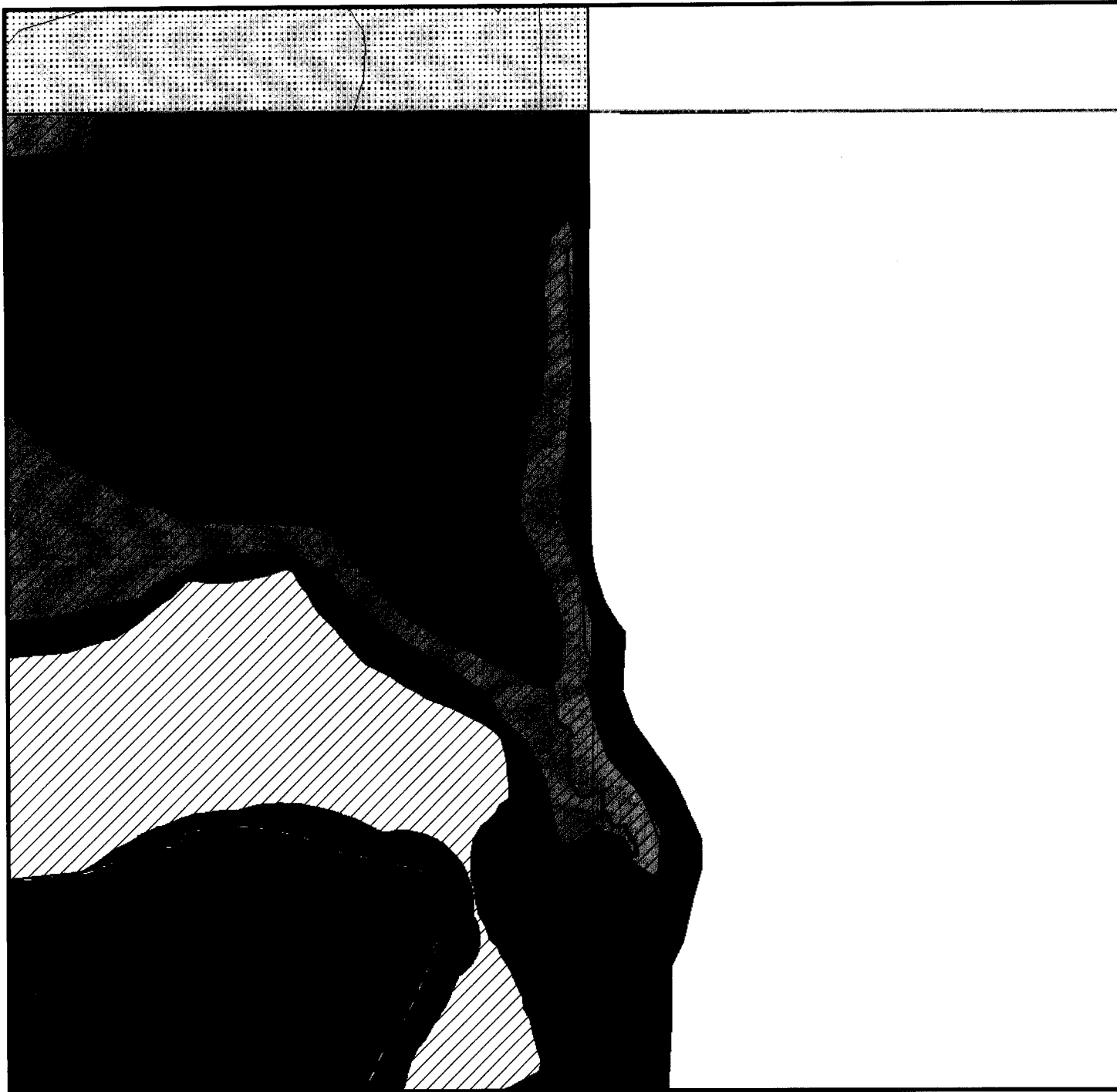
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EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

















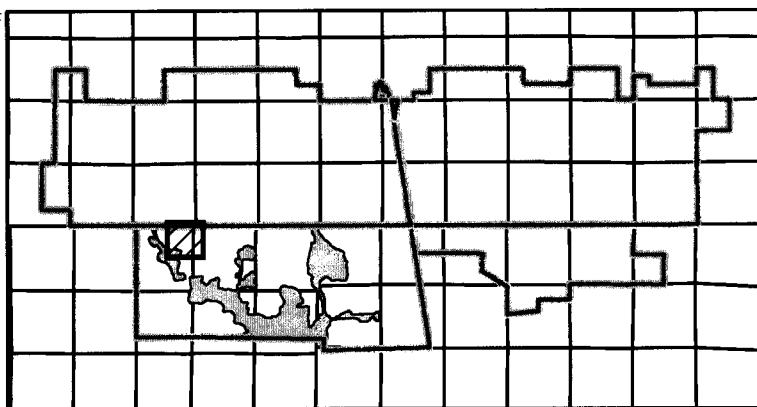
**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

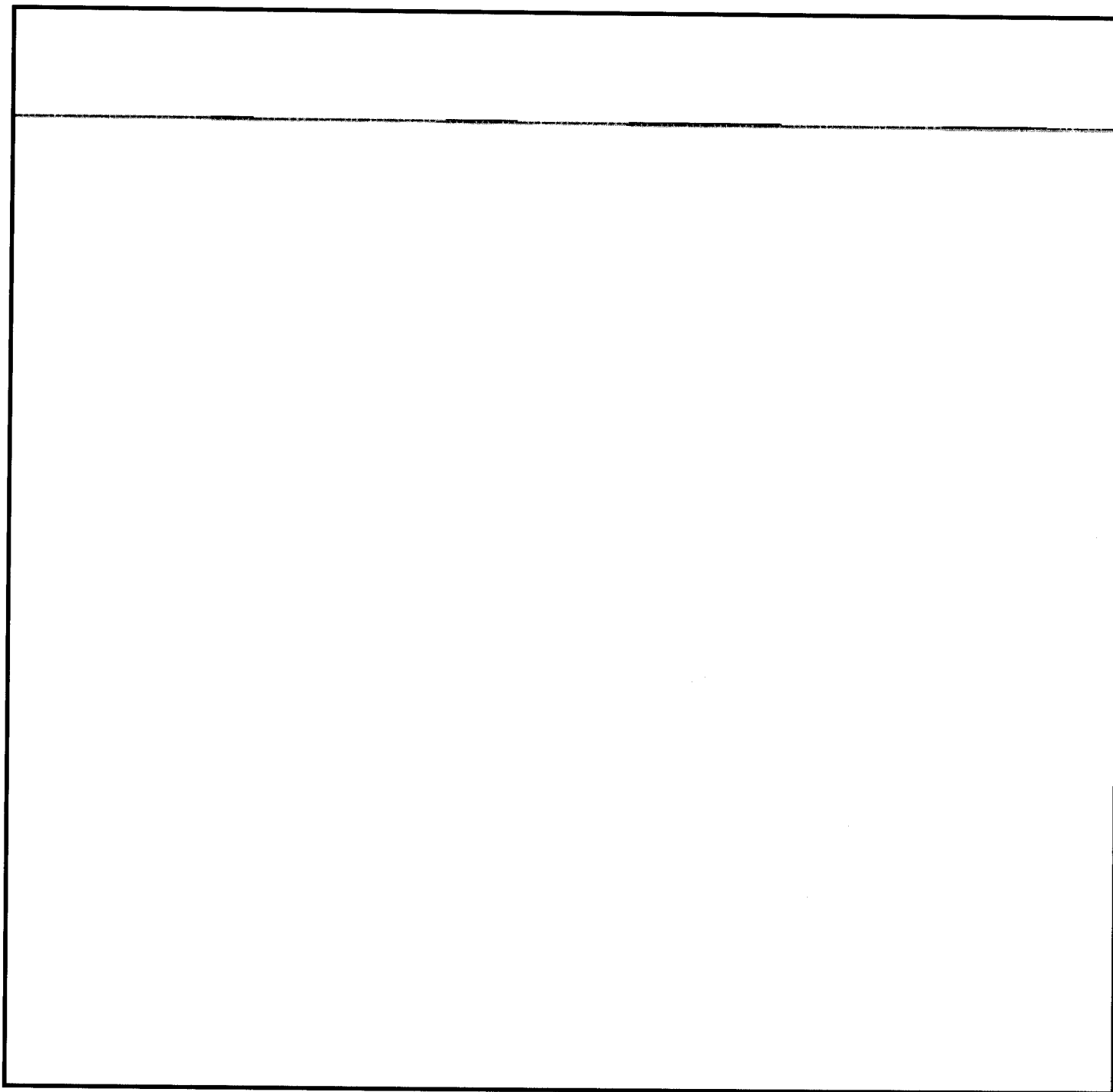




















- | | | | |
|--|---|---|---------------------------|
|  | South Pasture Mine |  | Other Habitat Restoration |
|  | South Pasture Extension |  | Post Reclamation Land Use |
|  | No Mine Boundary | | 200 |
|  | Planned Habitat Areas |  | 300 |
|  | Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- |  | 400 |
|  | Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- |  | 500 |
| | |  | 600 |
| | |  | 700 |
| | |  | 800 |

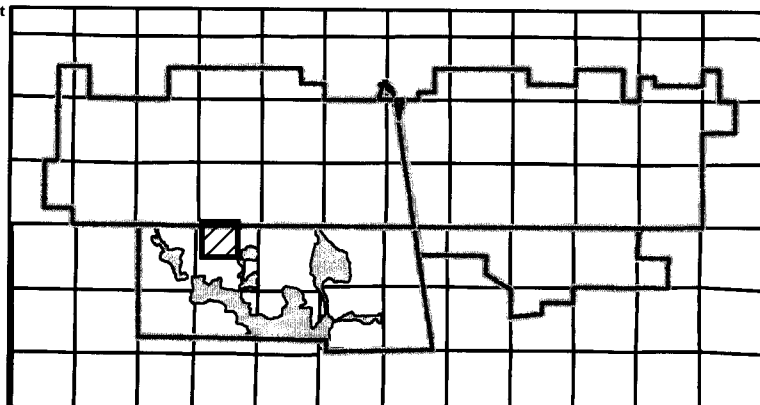


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP

Sheet 4 of 56

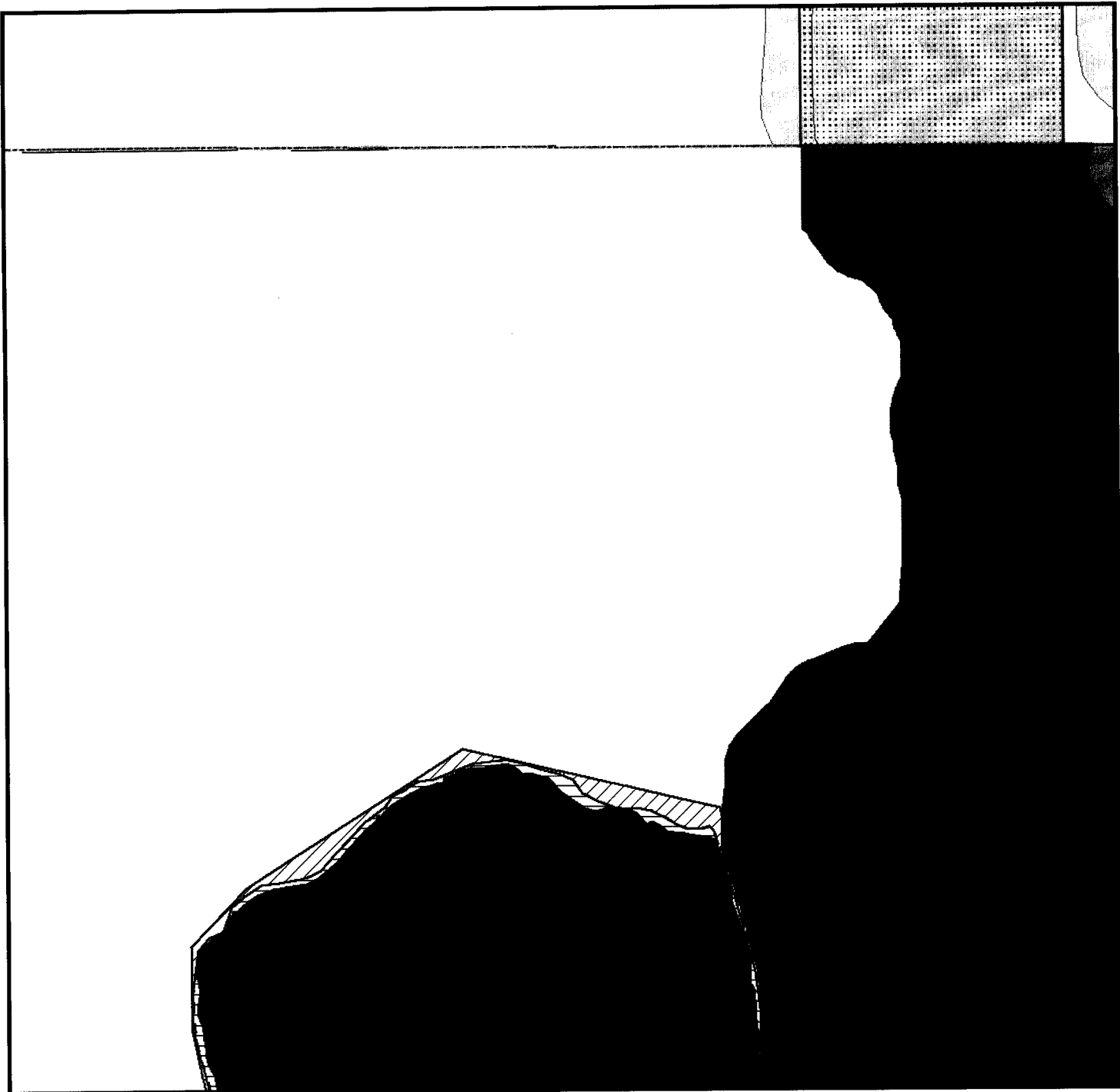


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|---|---|---|---------------------------|
|  | South Pasture Mine |  | Other Habitat Restoration |
|  | South Pasture Extension |  | Post Reclamation Land Use |
|  | No Mine Boundary |  | 200 |
|  | Planned Habitat Areas |  | 300 |
|  | Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- |  | 400 |
|  | Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- |  | 500 |
|  | |  | 600 |
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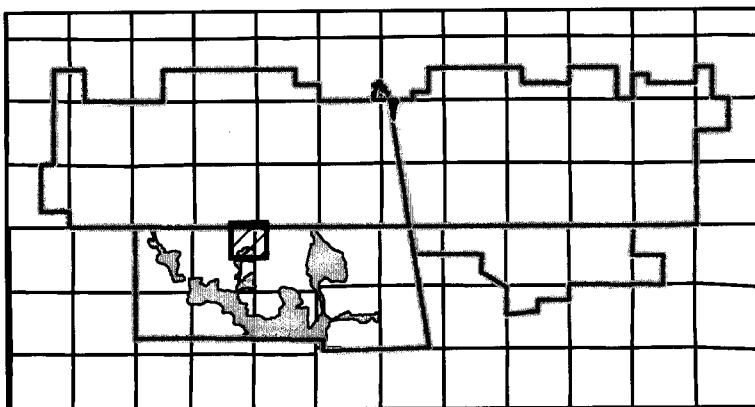


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

Sheet 5 of 56



- | | | | |
|--|---|--|---------------------------|
| | South Pasture Mine | | Other Habitat Restoration |
| | South Pasture Extension | | |
| | No Mine Boundary | | |
| | Planned Habitat Areas | | |
| | Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- | | |
| | Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- | | |
| | | | Post Reclamation Land Use |
| | | | 200 |
| | | | 300 |
| | | | 400 |
| | | | 500 |
| | | | 600 |
| | | | 700 |
| | | | 800 |



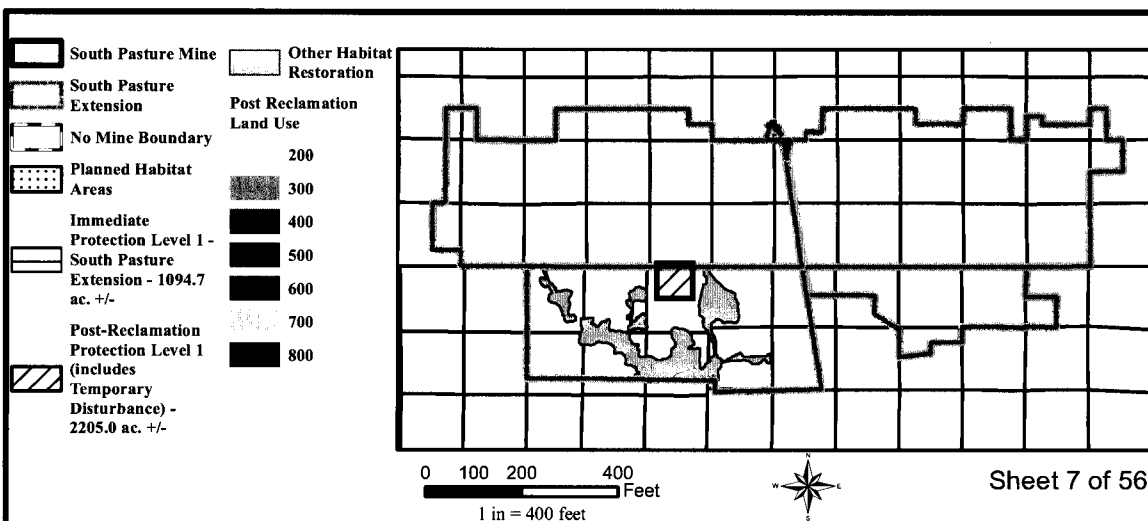
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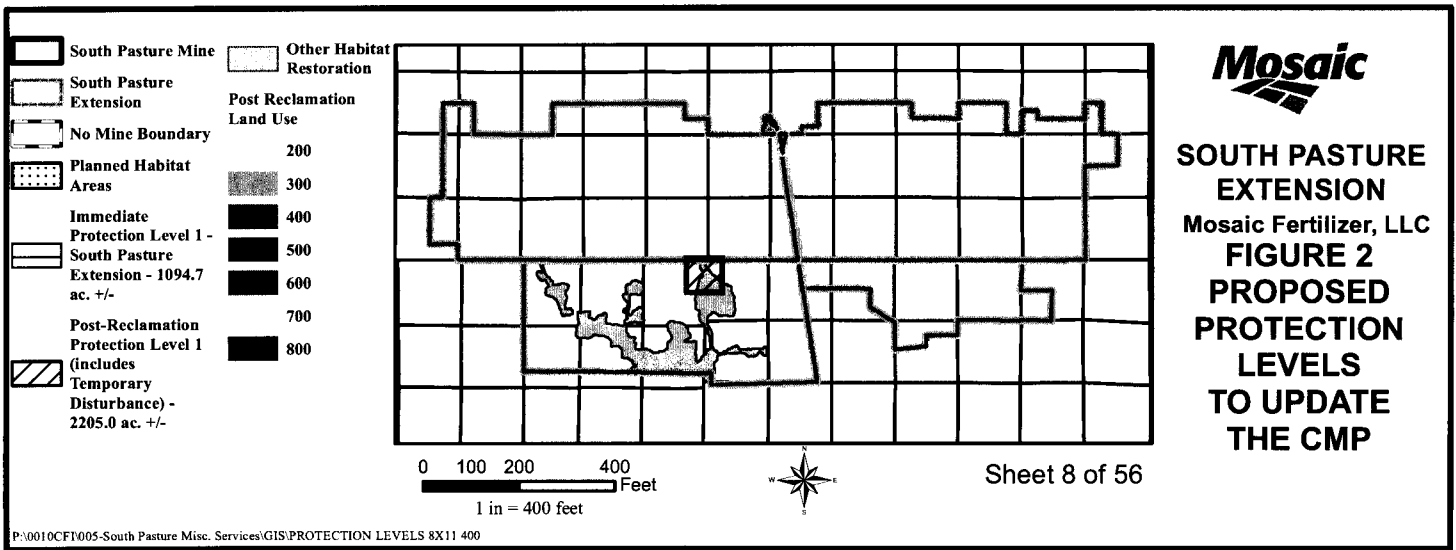
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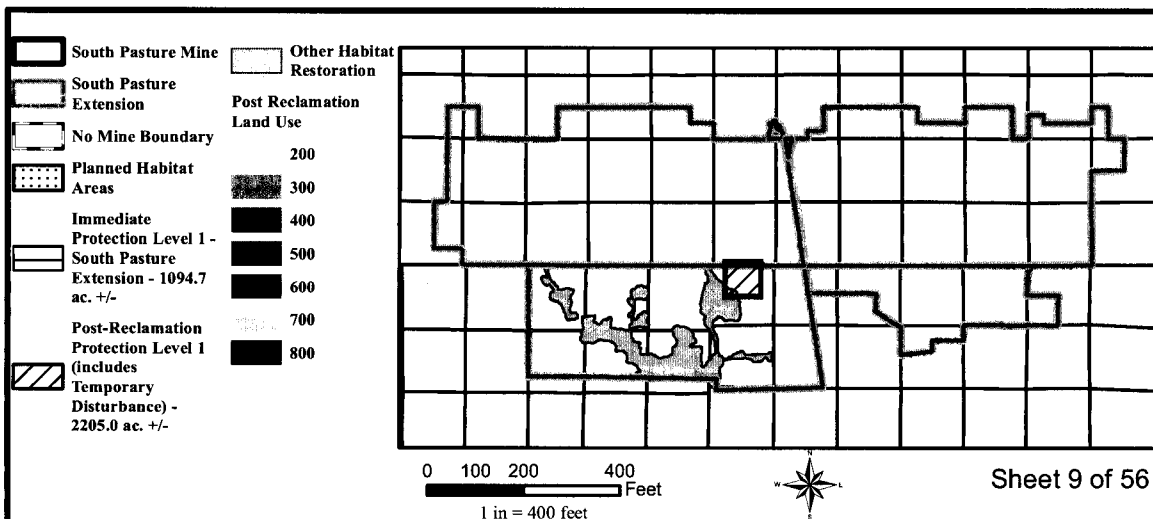


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**





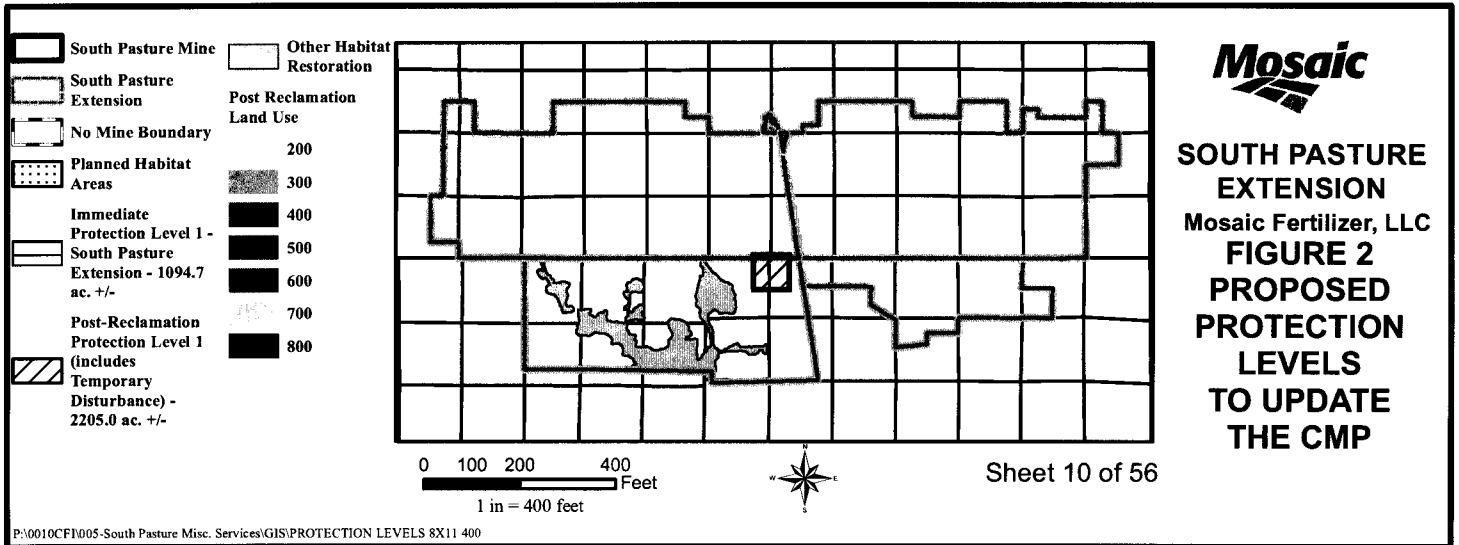
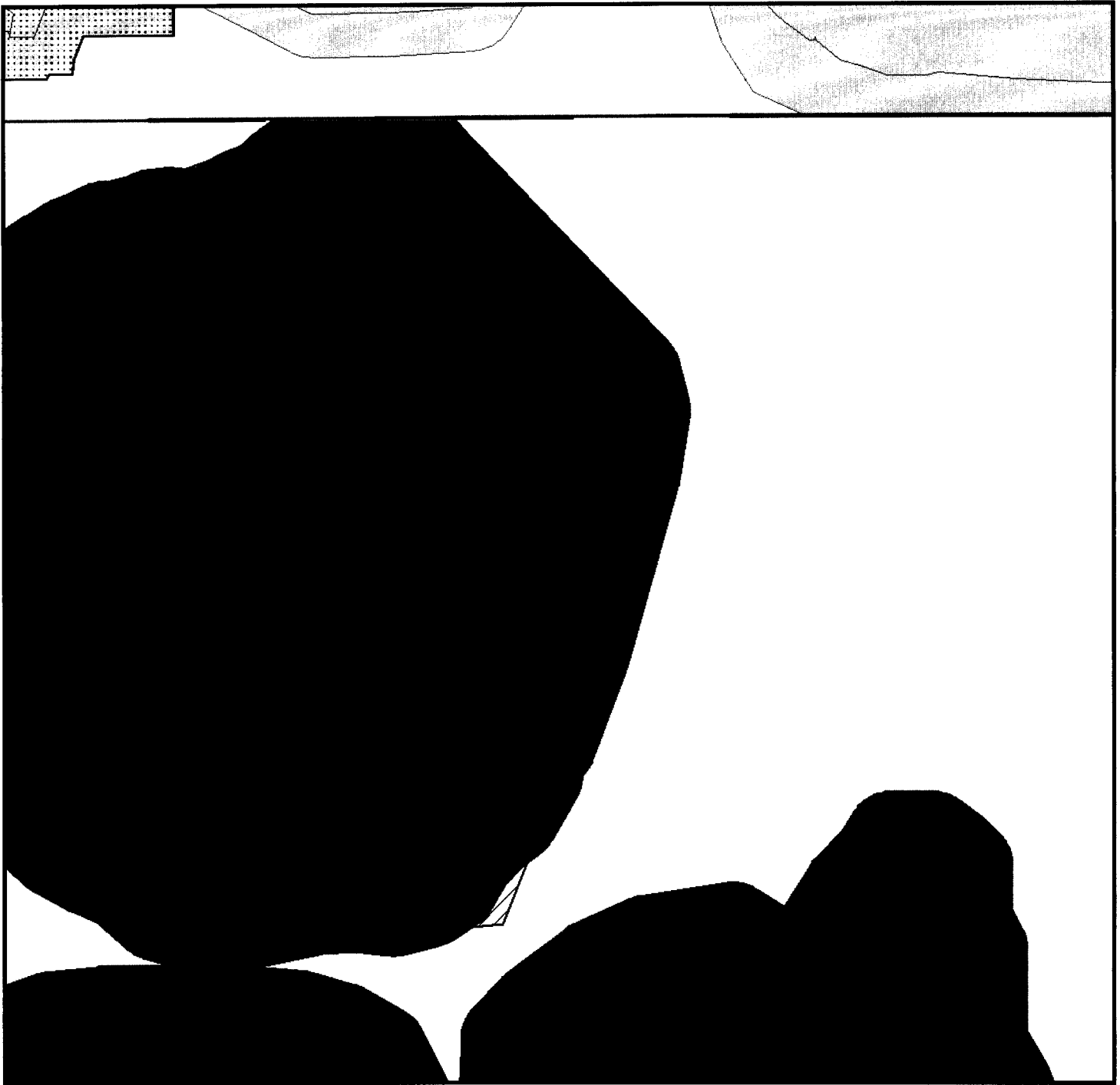
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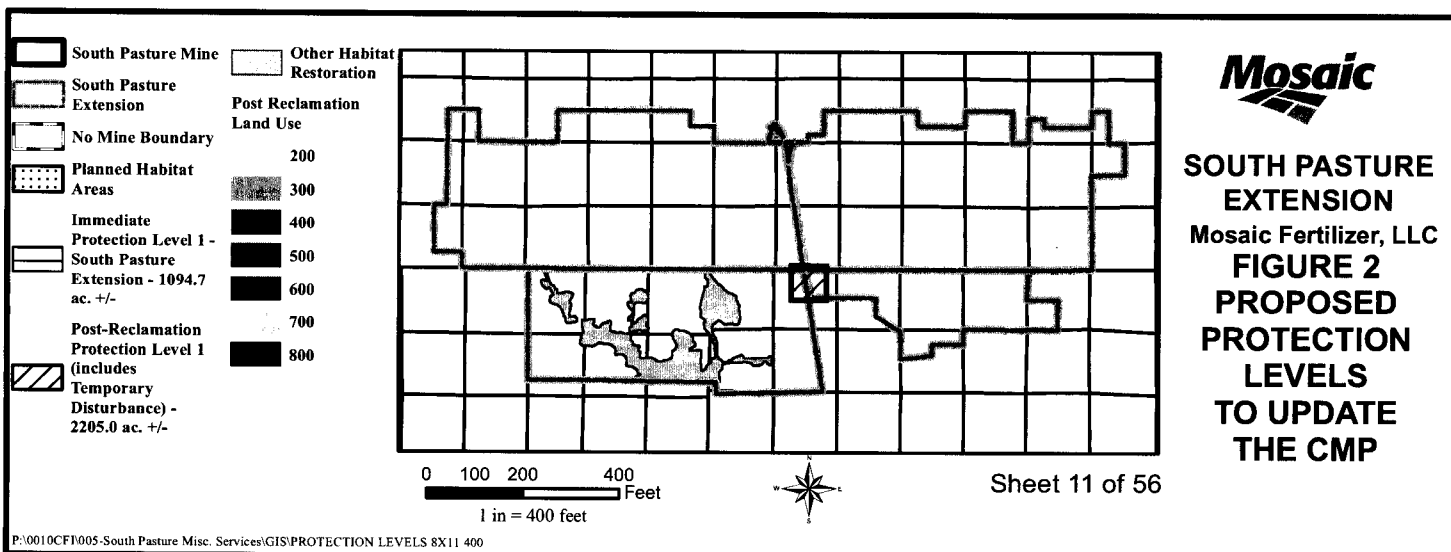
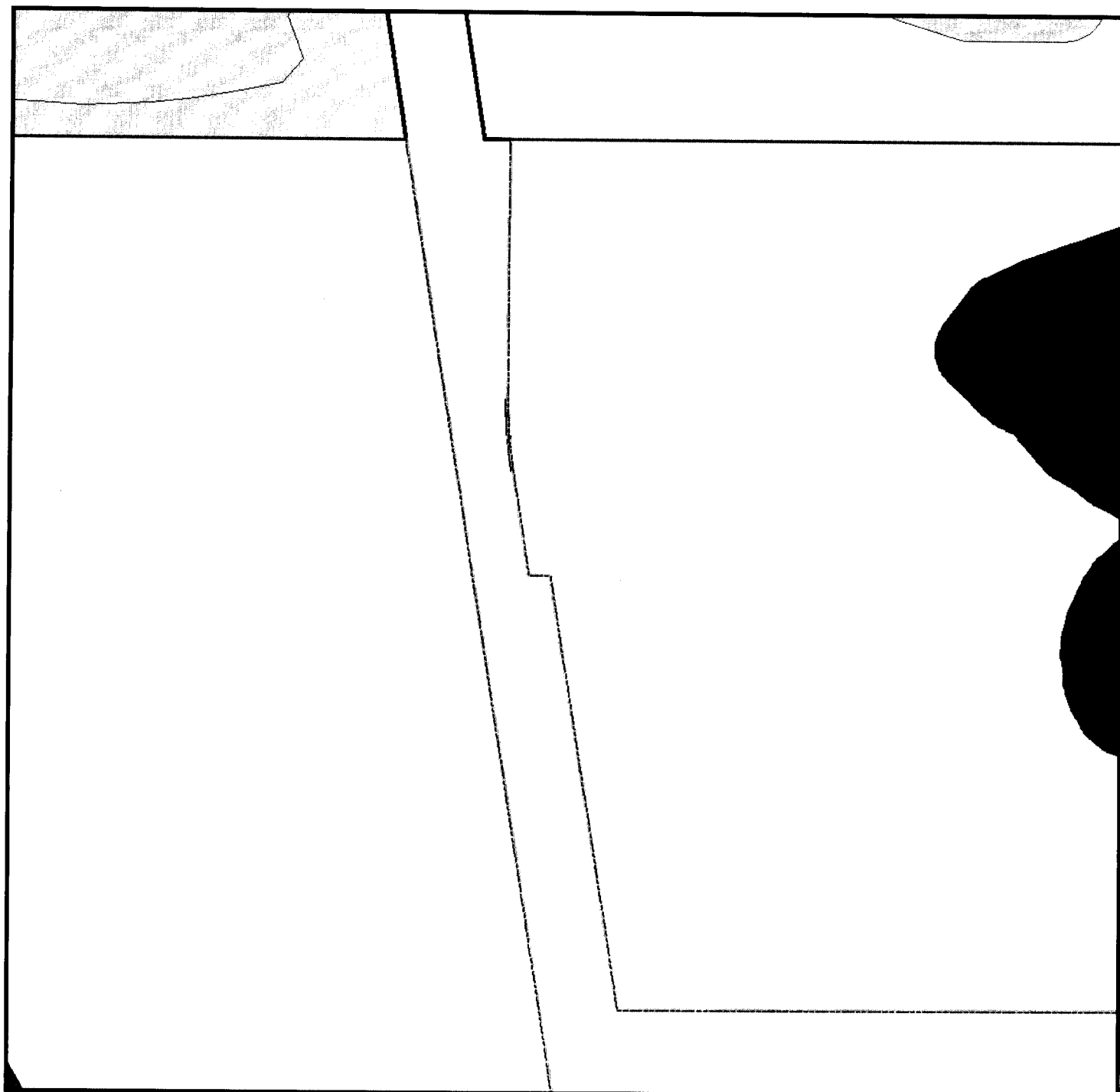
SOUTH PASTURE EXTENSION

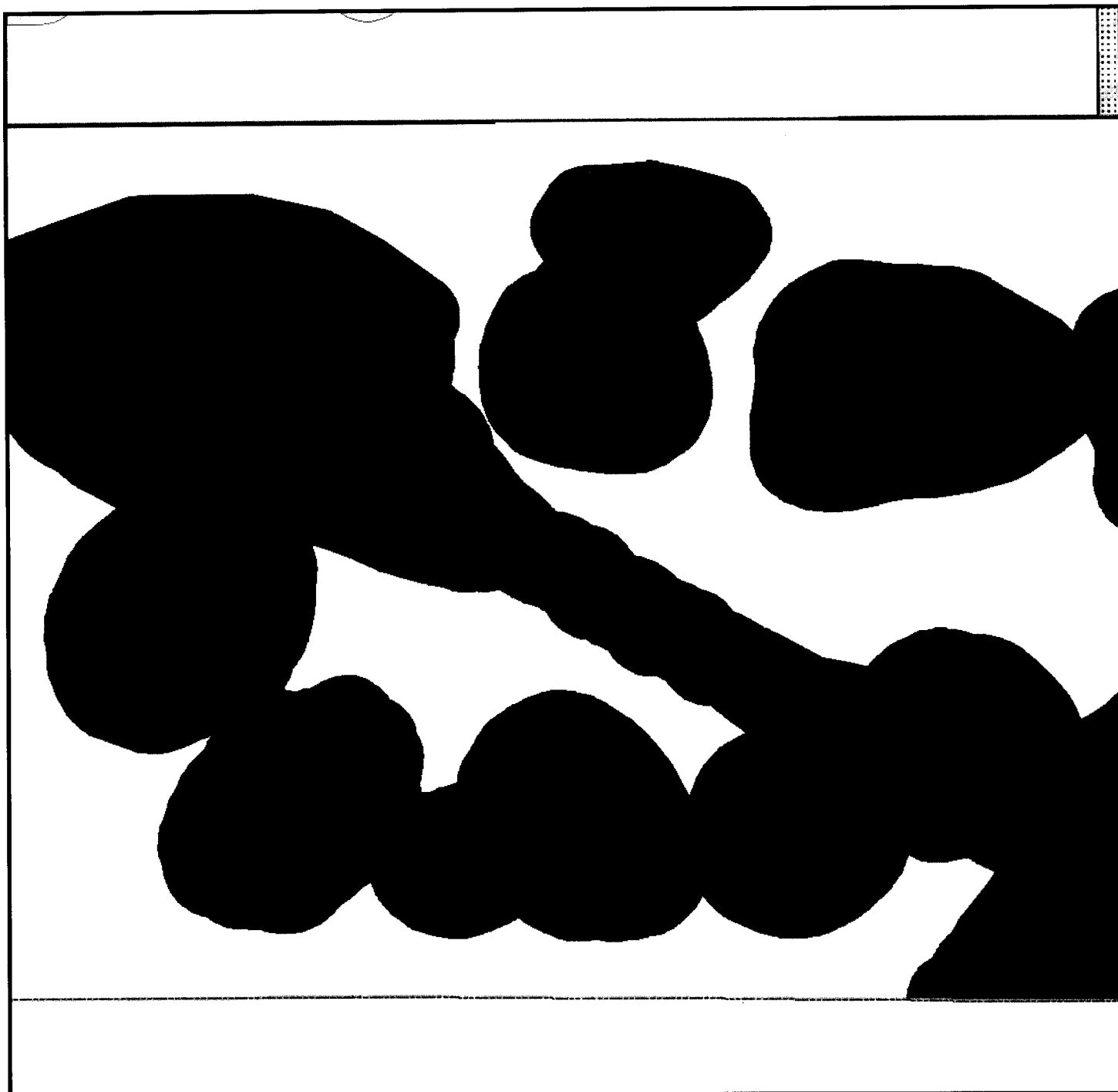
Mosaic Fertilizer, LLC

FIGURE 2

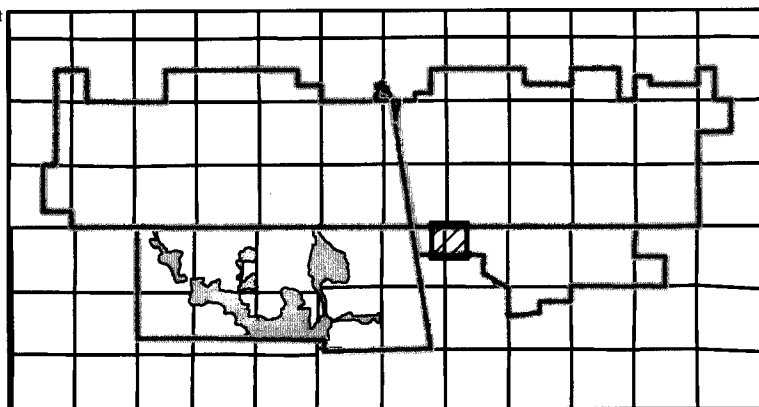
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP





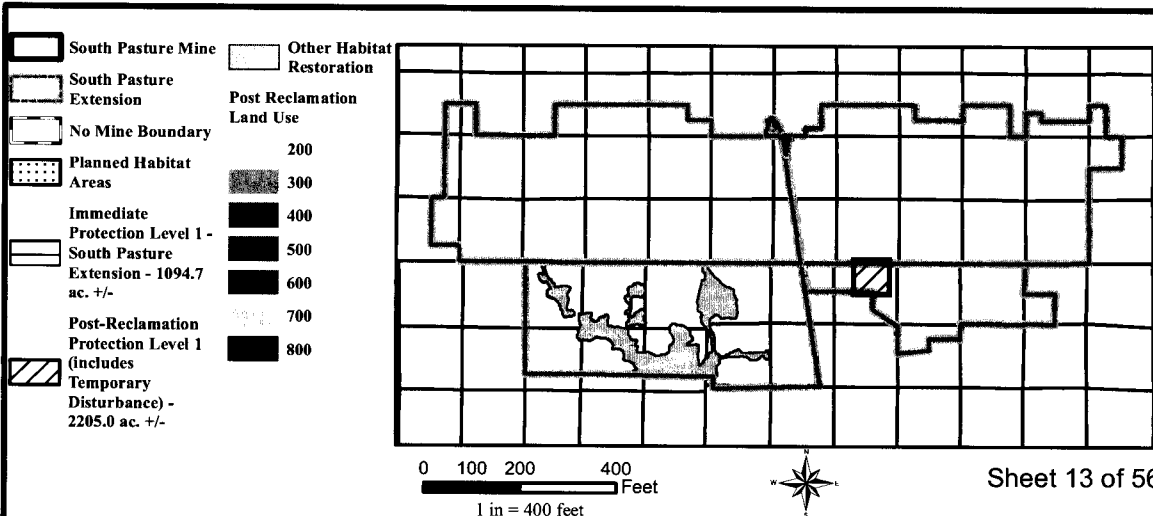
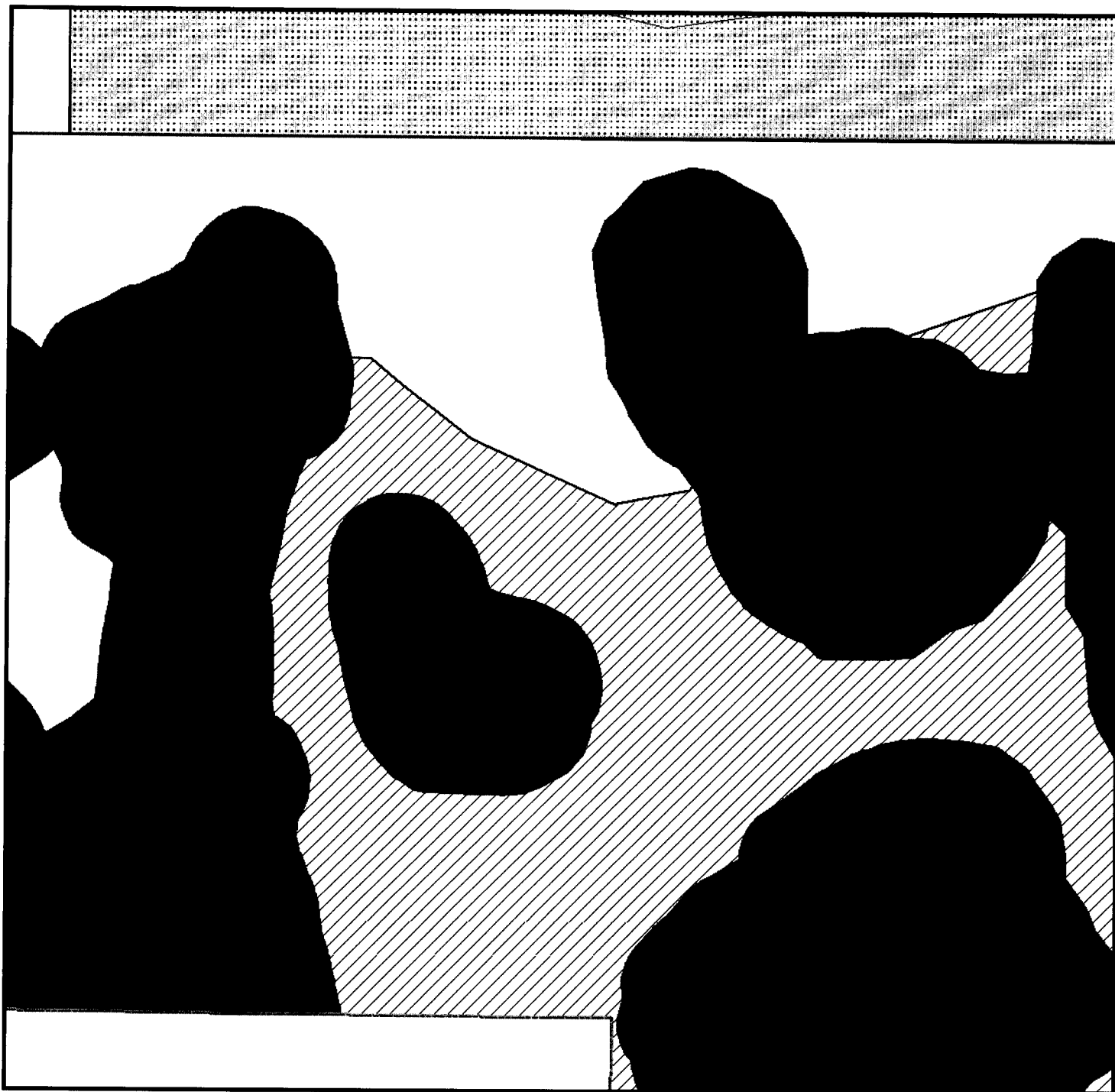


- South Pasture Mine
- South Pasture Extension
- No Mine Boundary
- Planned Habitat Areas
- Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
- Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-
- Other Habitat Restoration
- Post Reclamation Land Use**
- 200
- 300
- 400
- 500
- 600
- 700
- 800



**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

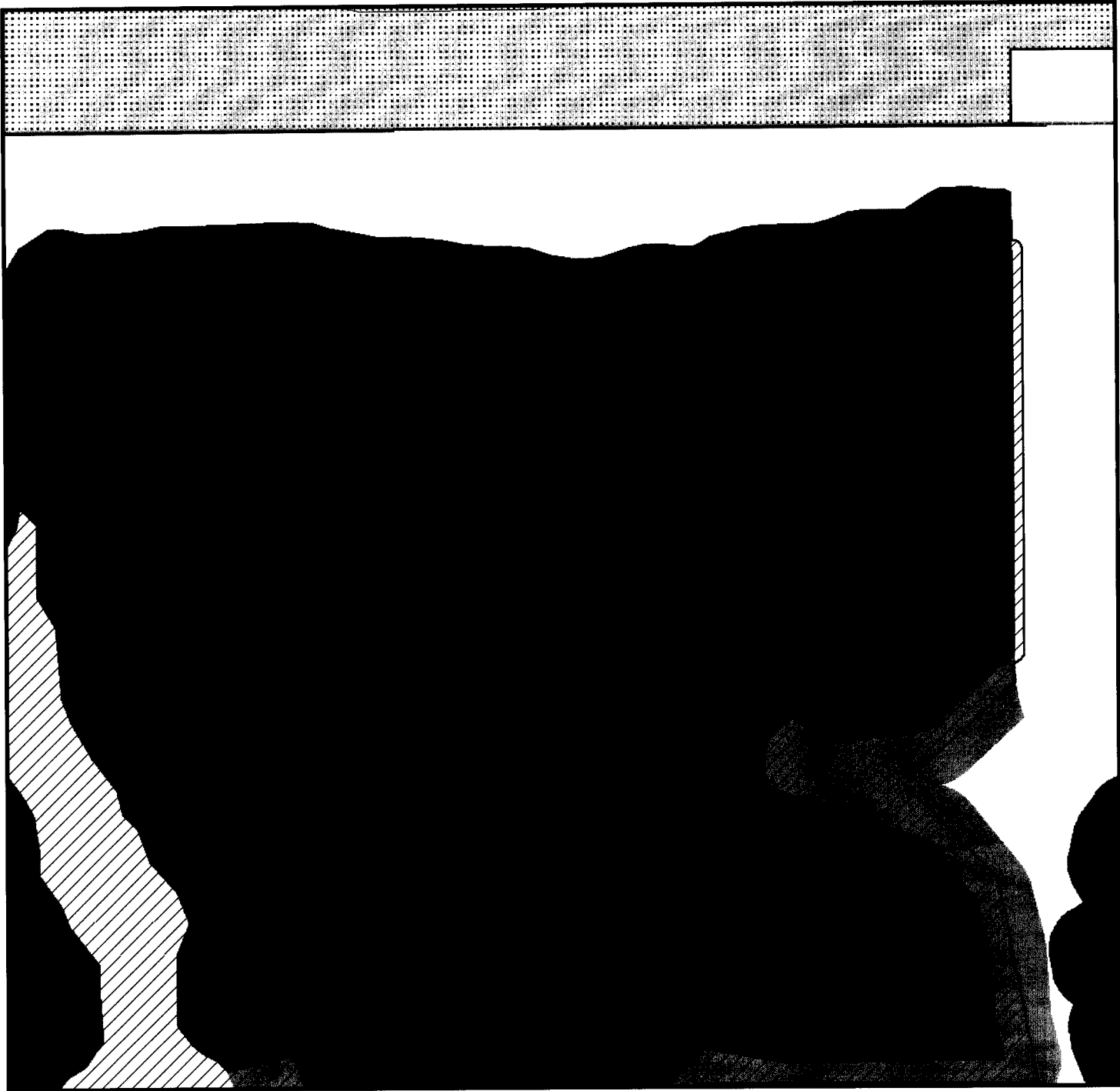
Sheet 12 of 56





















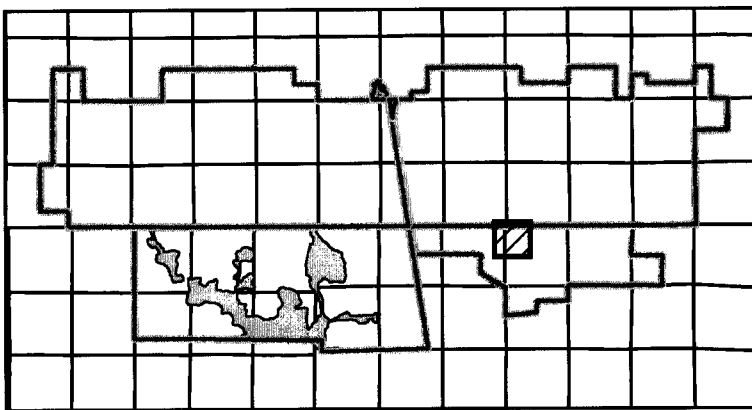
- | | |
|--|----------------------------------|
| South Pasture Mine | Other Habitat Restoration |
| South Pasture Extension | Post Reclamation Land Use |
| No Mine Boundary | 200 |
| Planned Habitat Areas | 300 |
| Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- | 400 |
| Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- | 500 |
| | 600 |
| | 700 |
| | 800 |



**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



- | | | | |
|---|---|---|---------------------------|
|  | South Pasture Mine |  | Other Habitat Restoration |
|  | South Pasture Extension |  | Post Reclamation Land Use |
|  | No Mine Boundary |  | 200 |
|  | Planned Habitat Areas |  | 300 |
|  | Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- |  | 400 |
|  | Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- |  | 500 |
|  | |  | 600 |
|  | |  | 700 |
|  | |  | 800 |



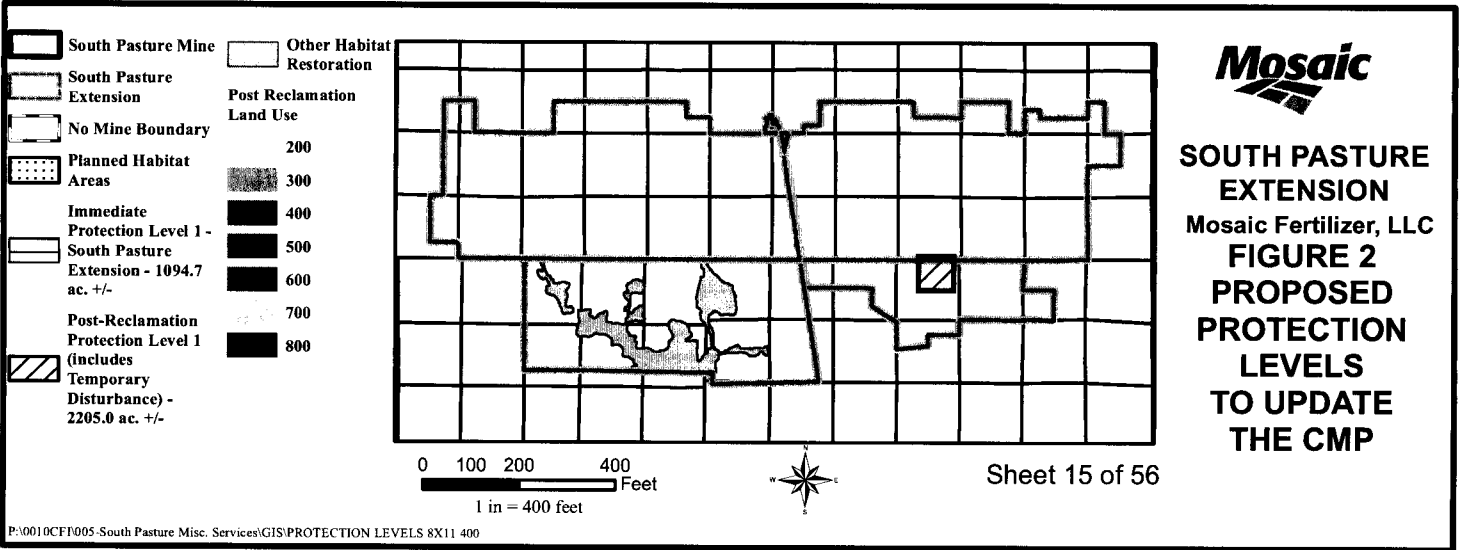
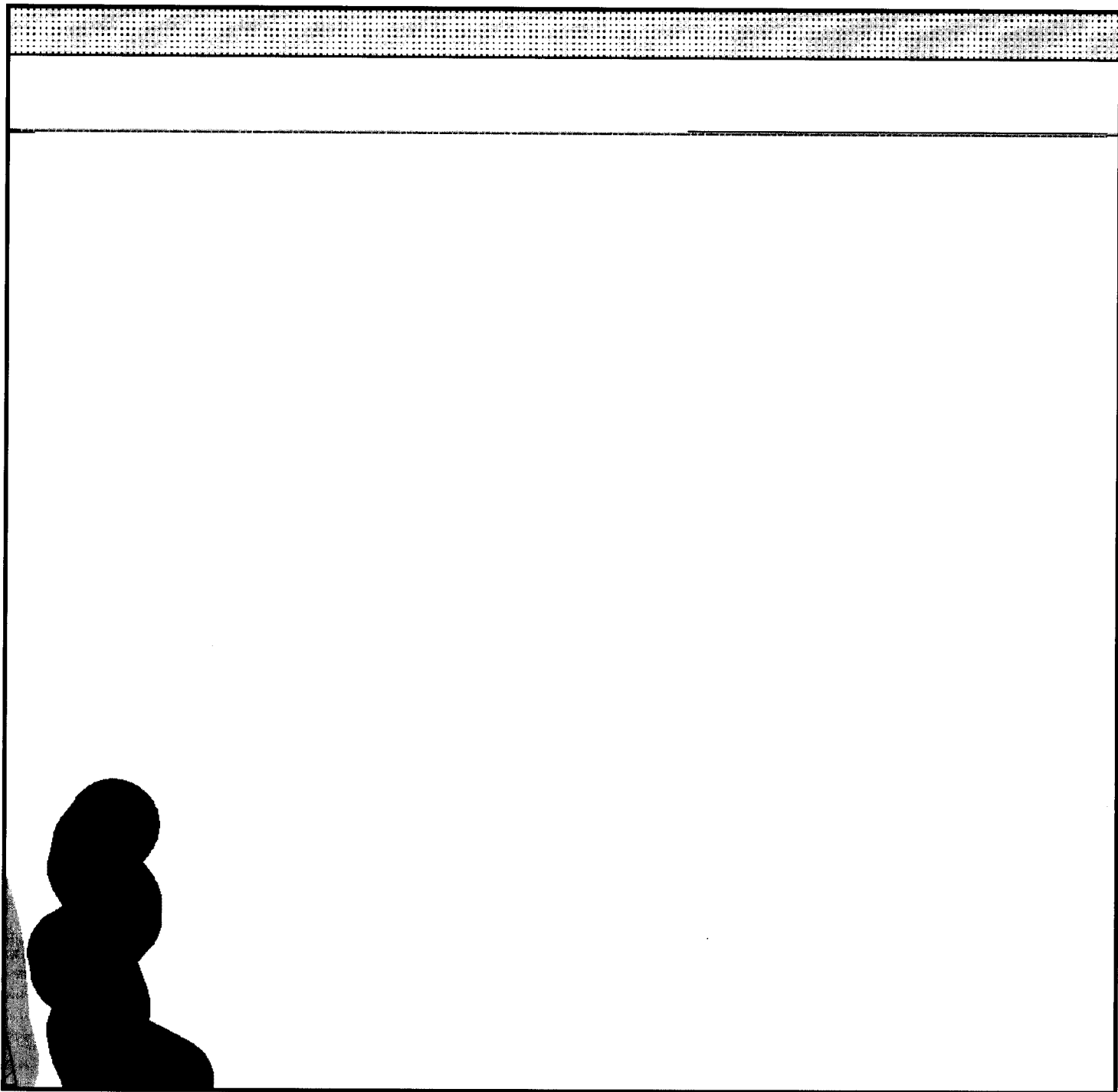
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Feet
1 in = 400 feet

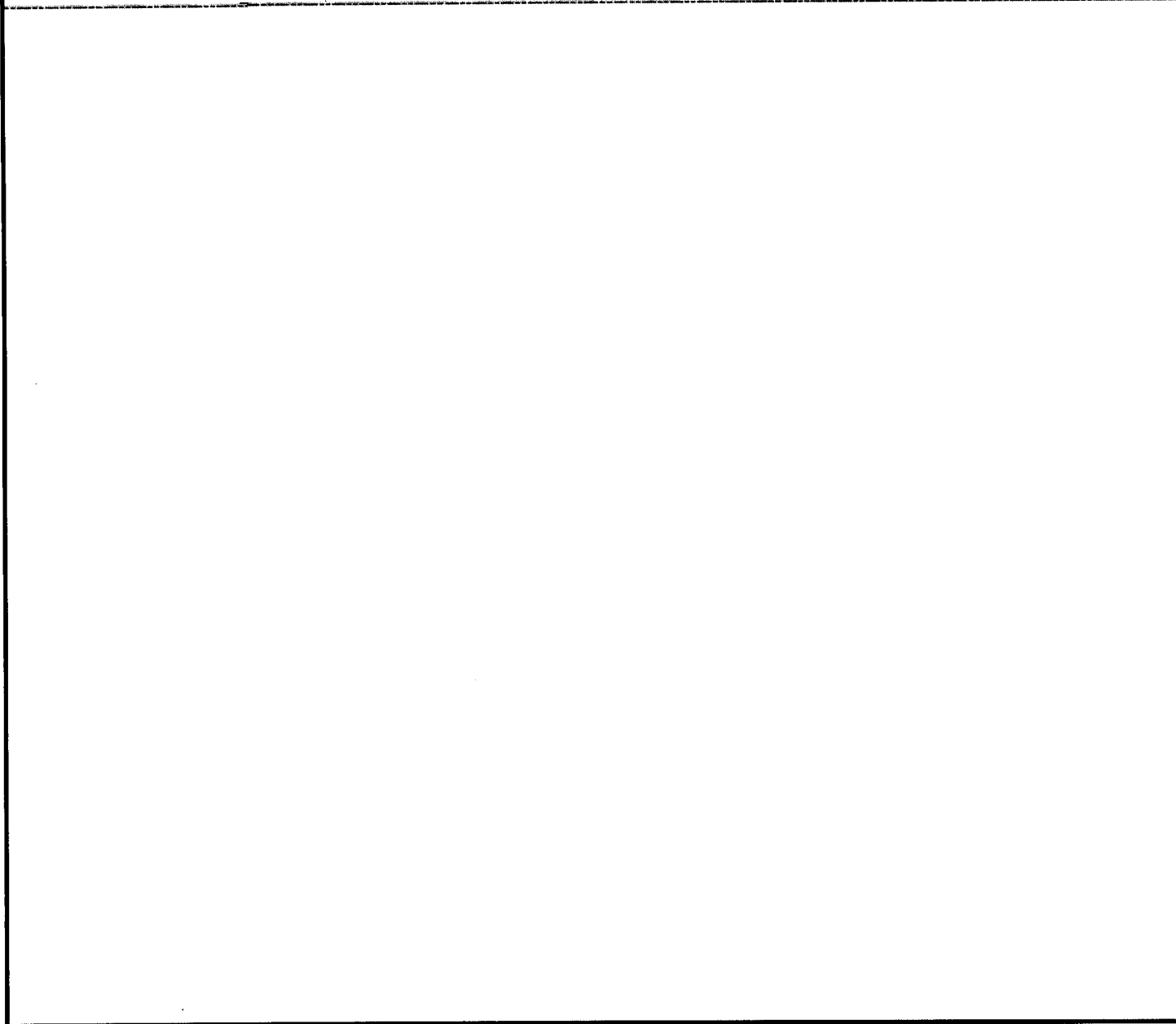















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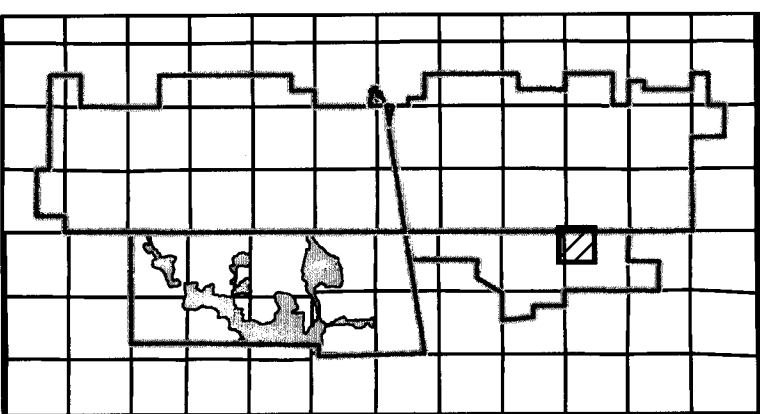


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**





- | | | | |
|--|---|---|---------------------------|
|  | South Pasture Mine |  | Other Habitat Restoration |
|  | South Pasture Extension |  | Post Reclamation Land Use |
|  | No Mine Boundary | | 200 |
|  | Planned Habitat Areas |  | 300 |
| | Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- |  | 400 |
|  | Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- |  | 500 |
| | |  | 600 |
| | |  | 700 |
| | |  | 800 |

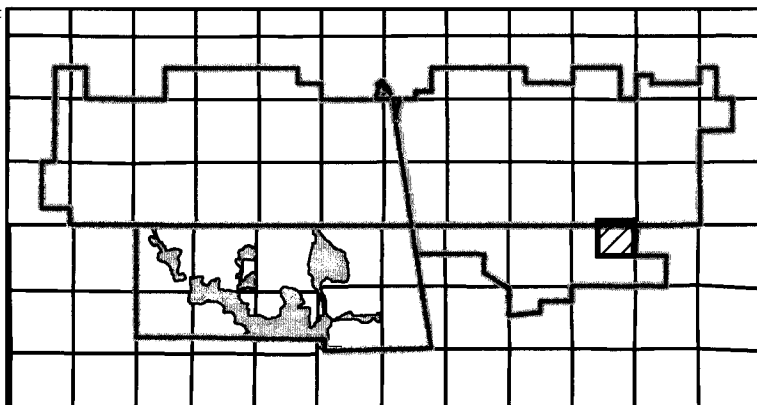
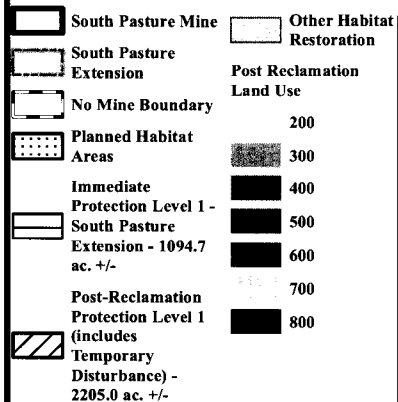


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

0 100 200 400
Feet
1 in = 400 feet



Sheet 16 of 56



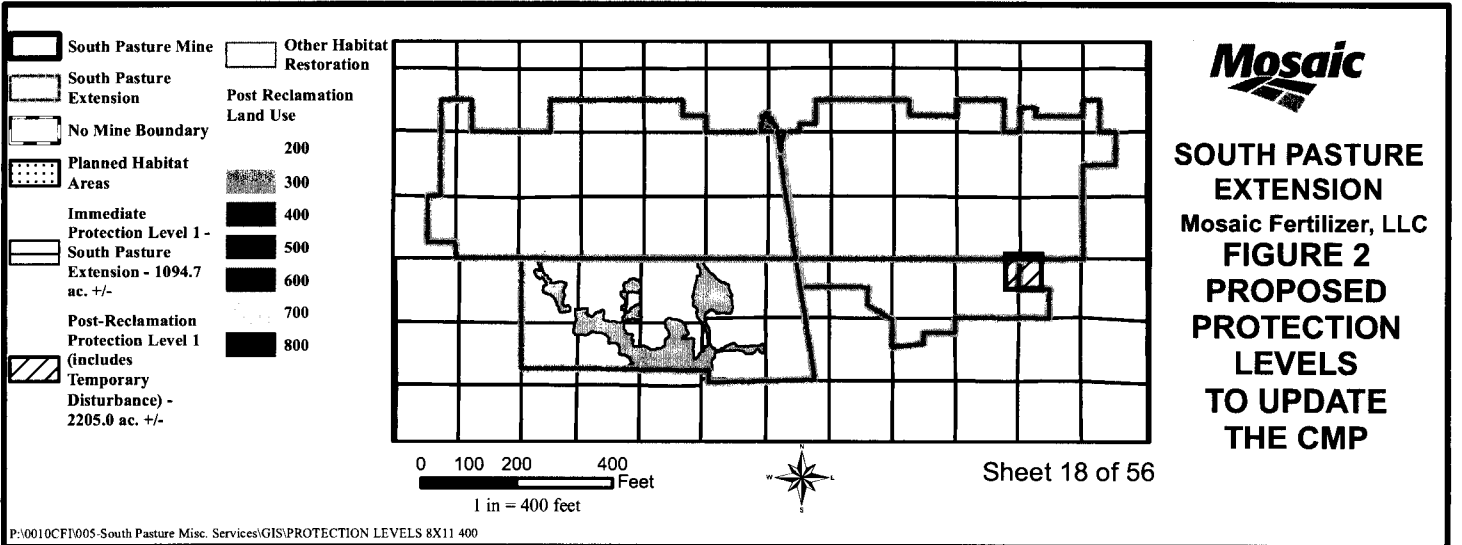
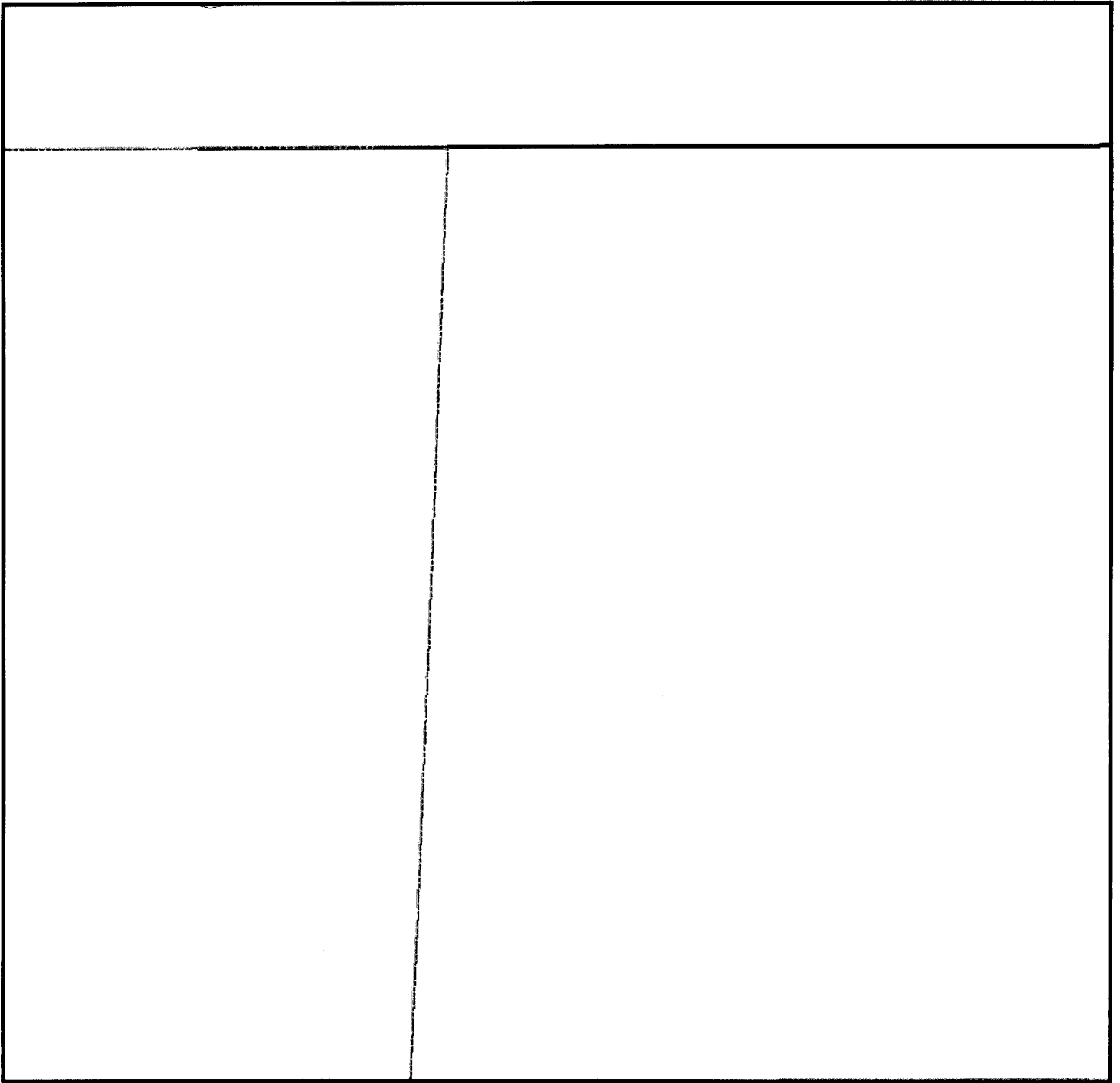
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Feet
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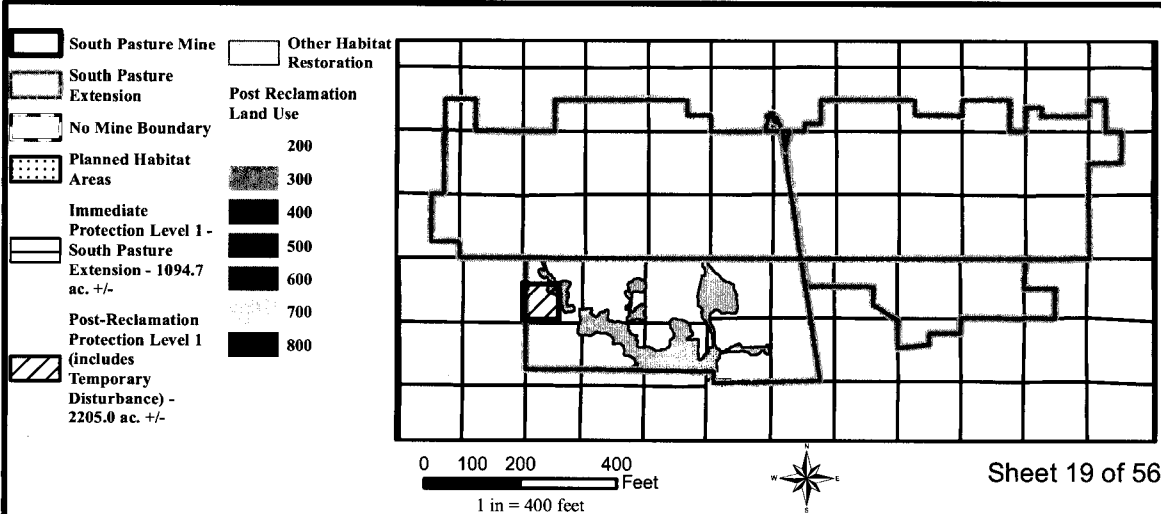
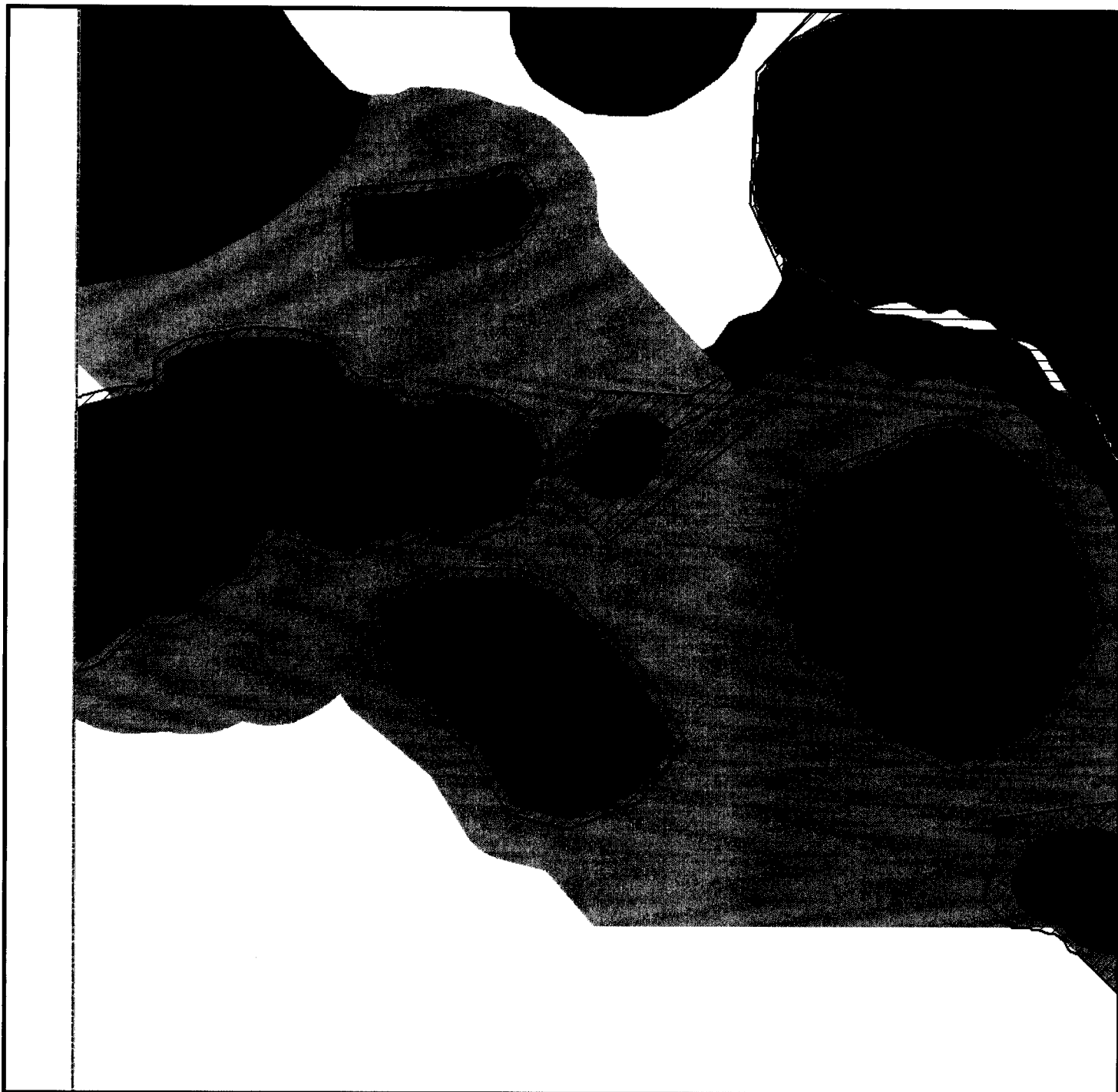


Sheet 17 of 56

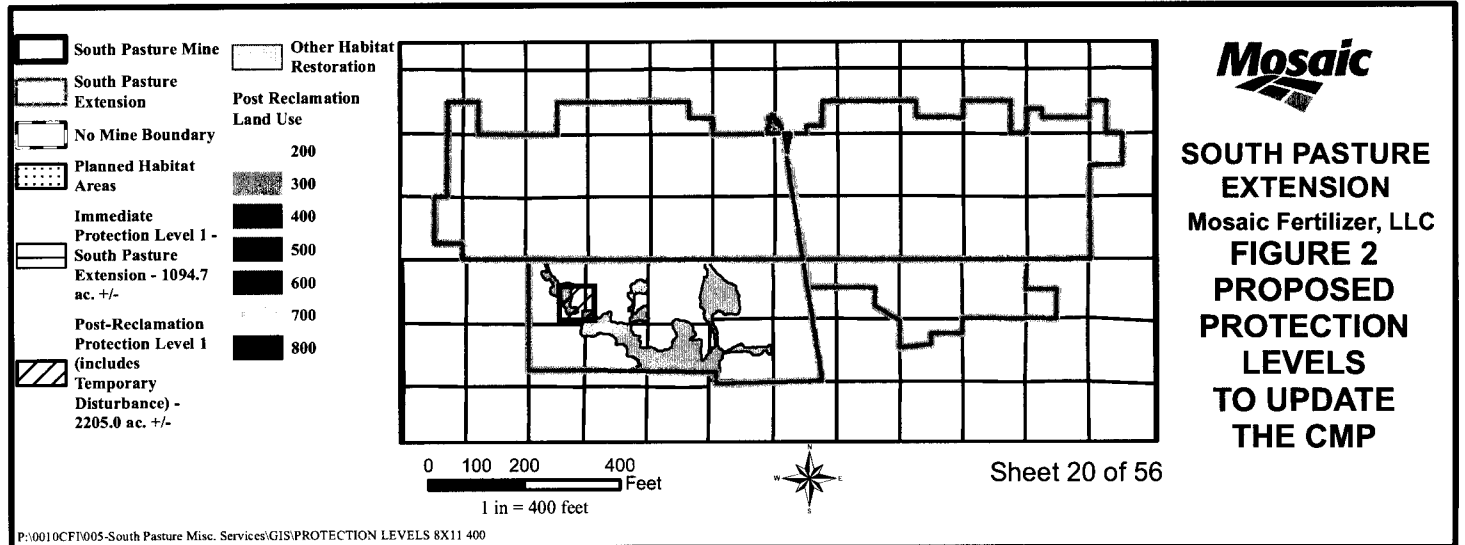


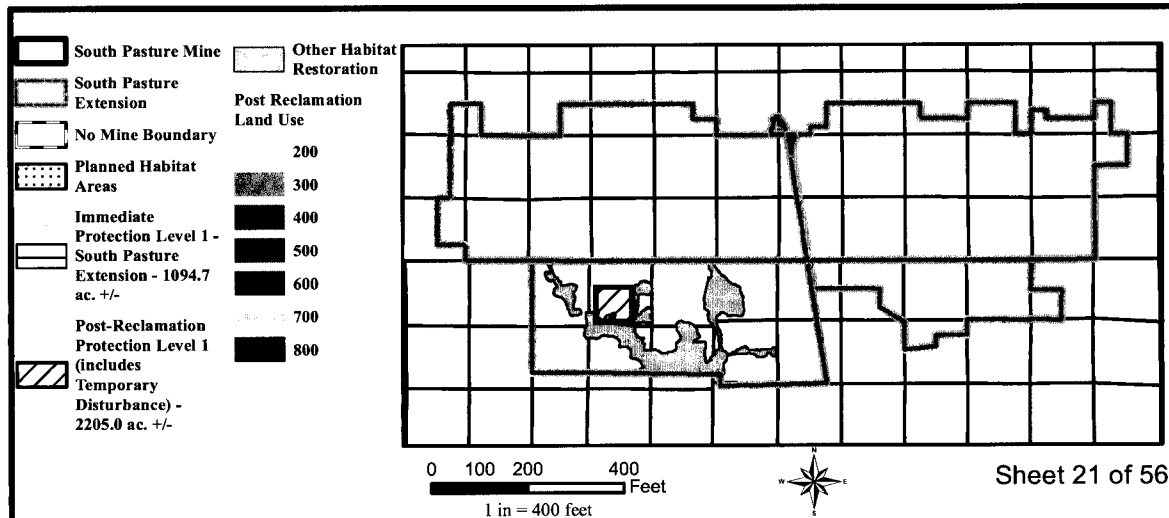
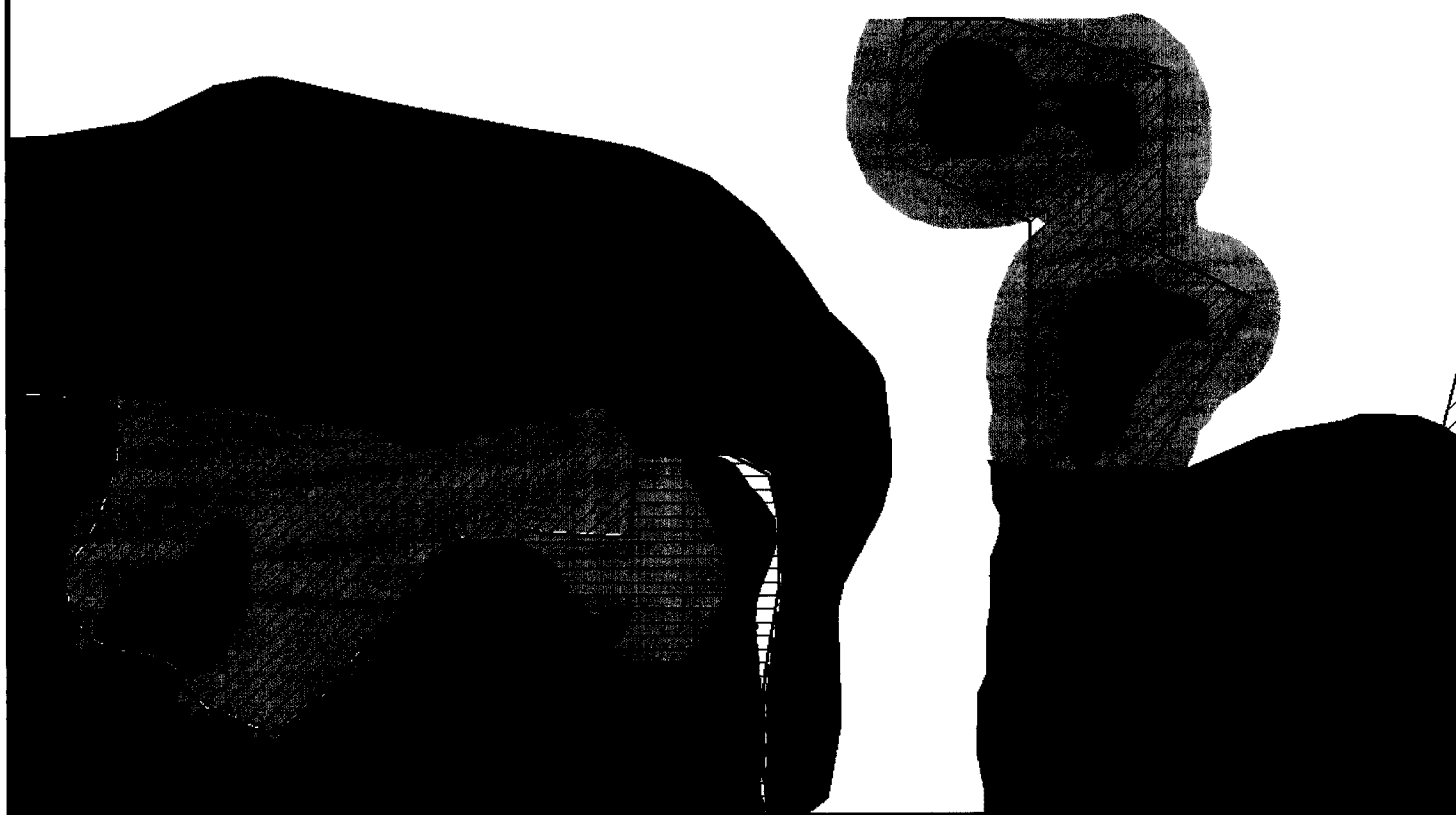
**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**





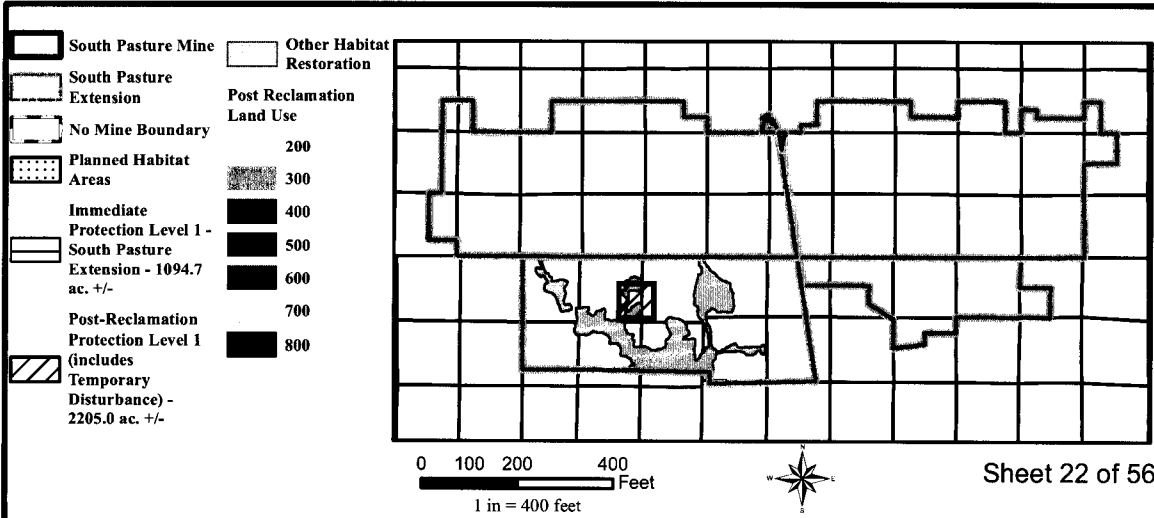
**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



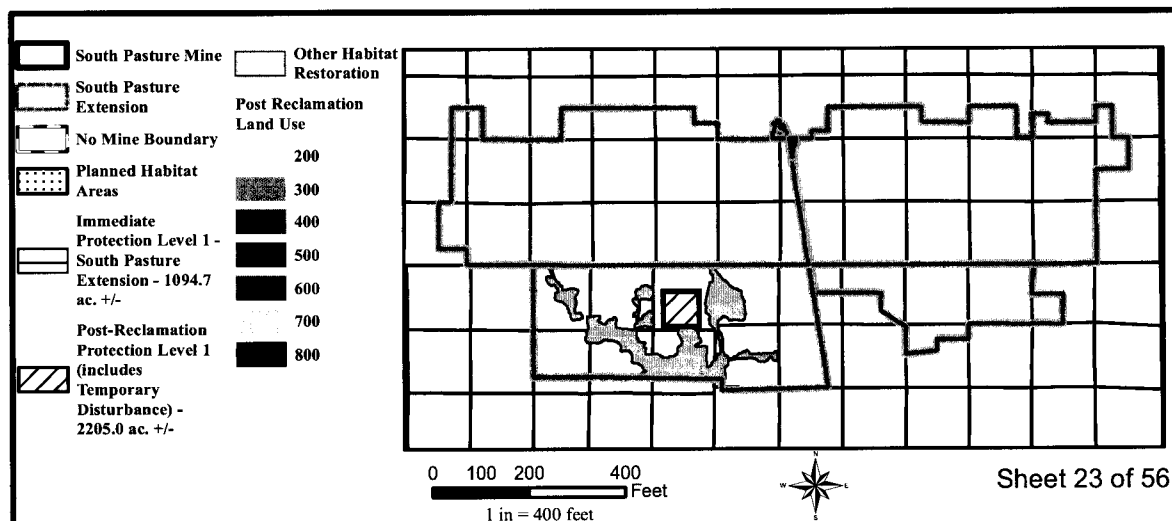


Mosaic

SOUTH PASTURE EXTENSION
Mosaic Fertilizer, LLC
FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

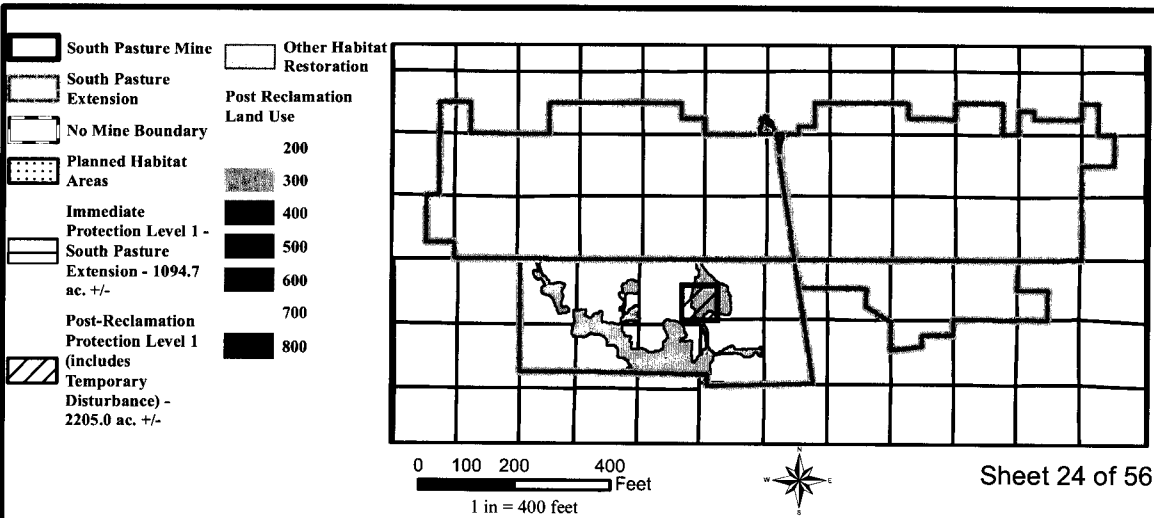


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



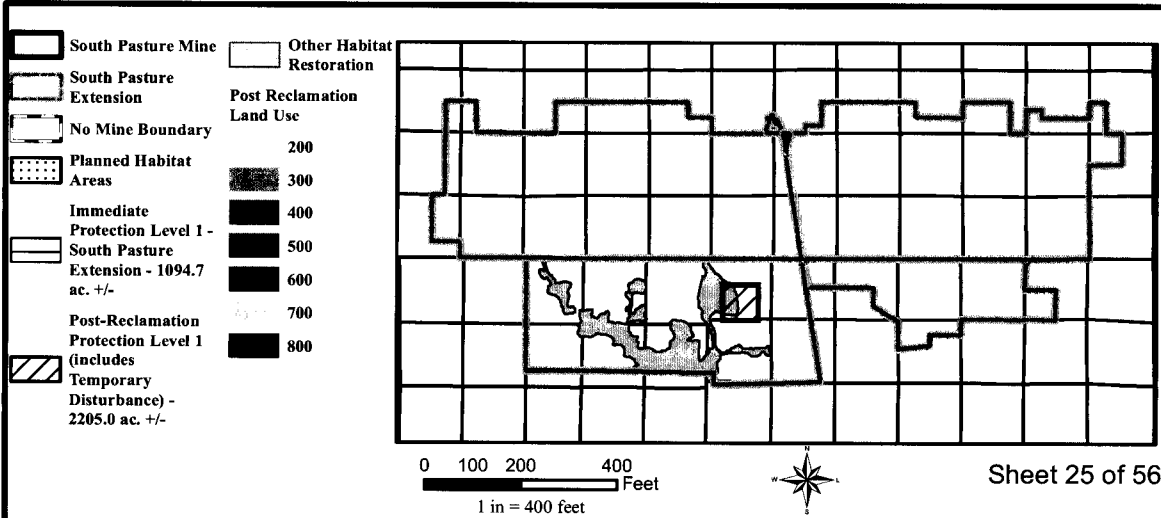
Mosaic

**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

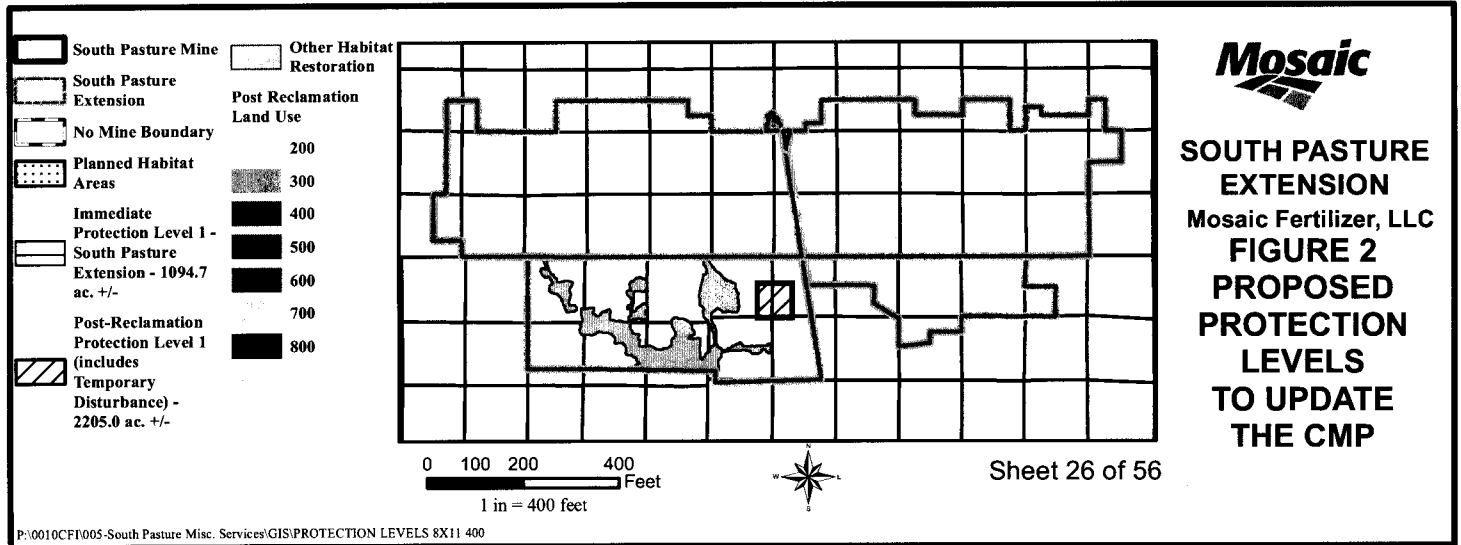
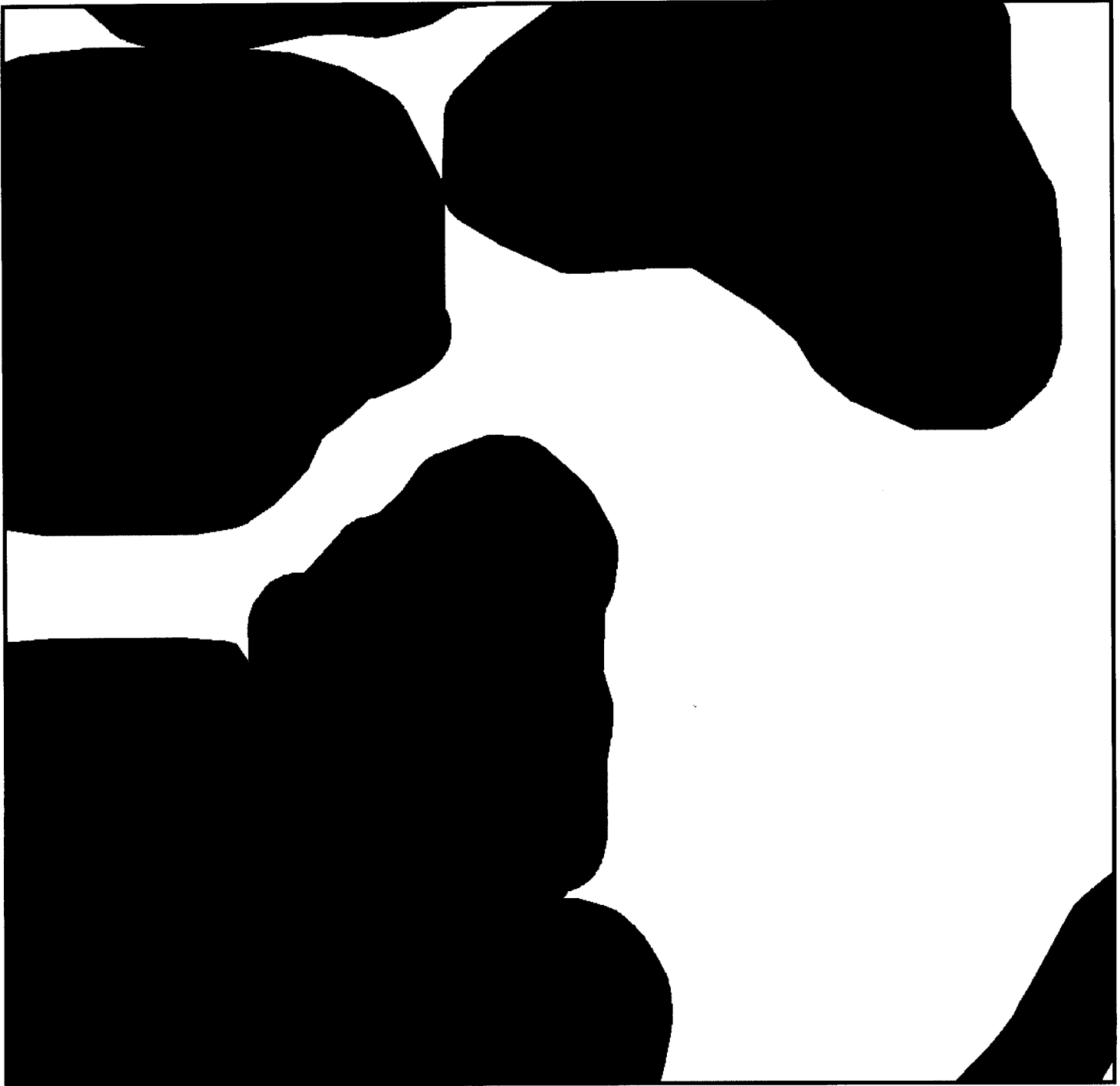


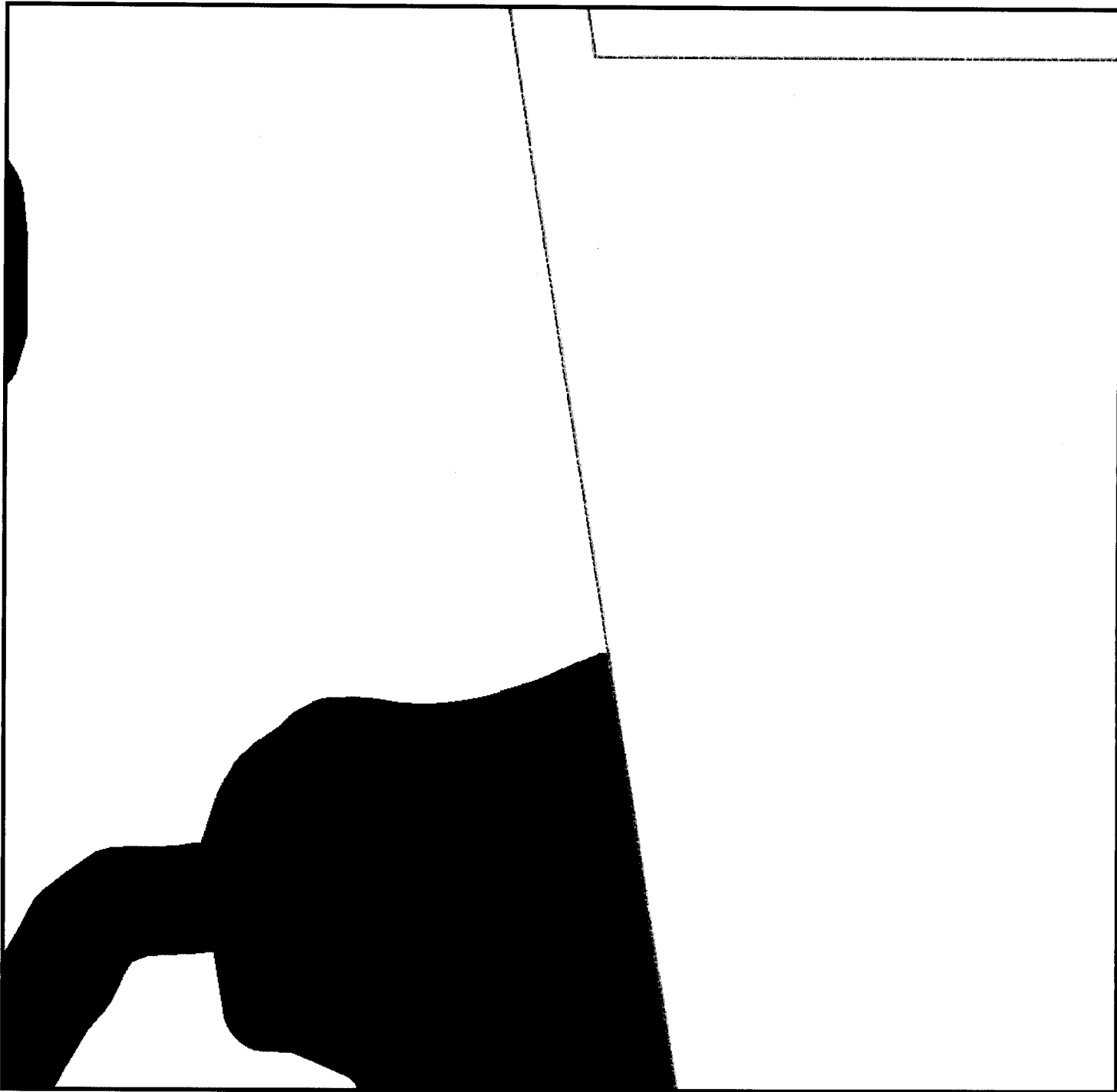
Mosaic














SOUTH PASTURE EXTENSION
Mosaic Fertilizer, LLC
FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

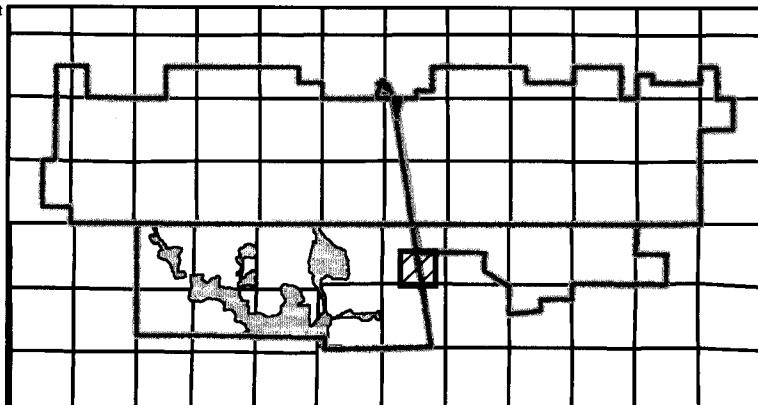


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**





- | | |
|---|---|
|  South Pasture Mine |  Other Habitat Restoration |
|  South Pasture Extension | Post Reclamation Land Use |
|  No Mine Boundary |  200 |
|  Planned Habitat Areas |  300 |
| Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- |  400 |
|  Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- |  500 |
| |  600 |
| |  700 |
| |  800 |

















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1 in = 400 feet

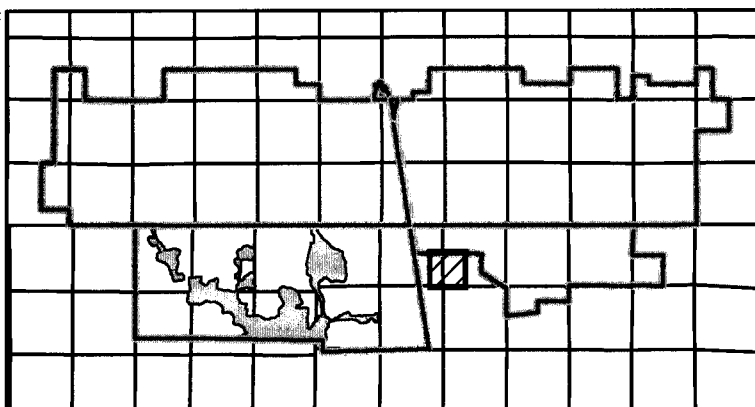


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**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

-  South Pasture Mine
-  South Pasture Extension
-  No Mine Boundary
-  Planned Habitat Areas
-  Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
-  Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-
-  Other Habitat Restoration
- Post Reclamation Land Use**
-  200
-  300
-  400
-  500
-  600
-  700
-  800



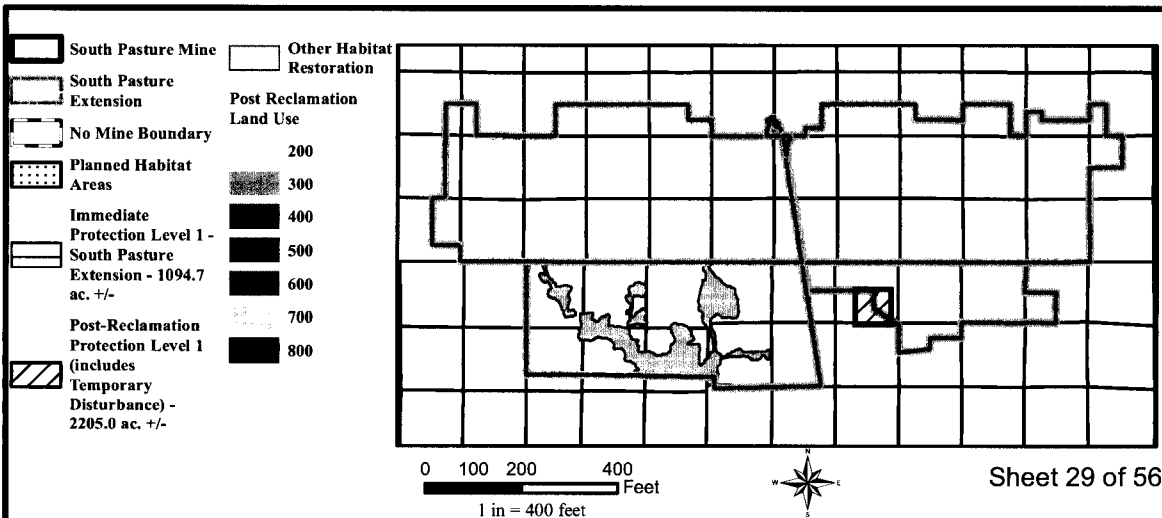
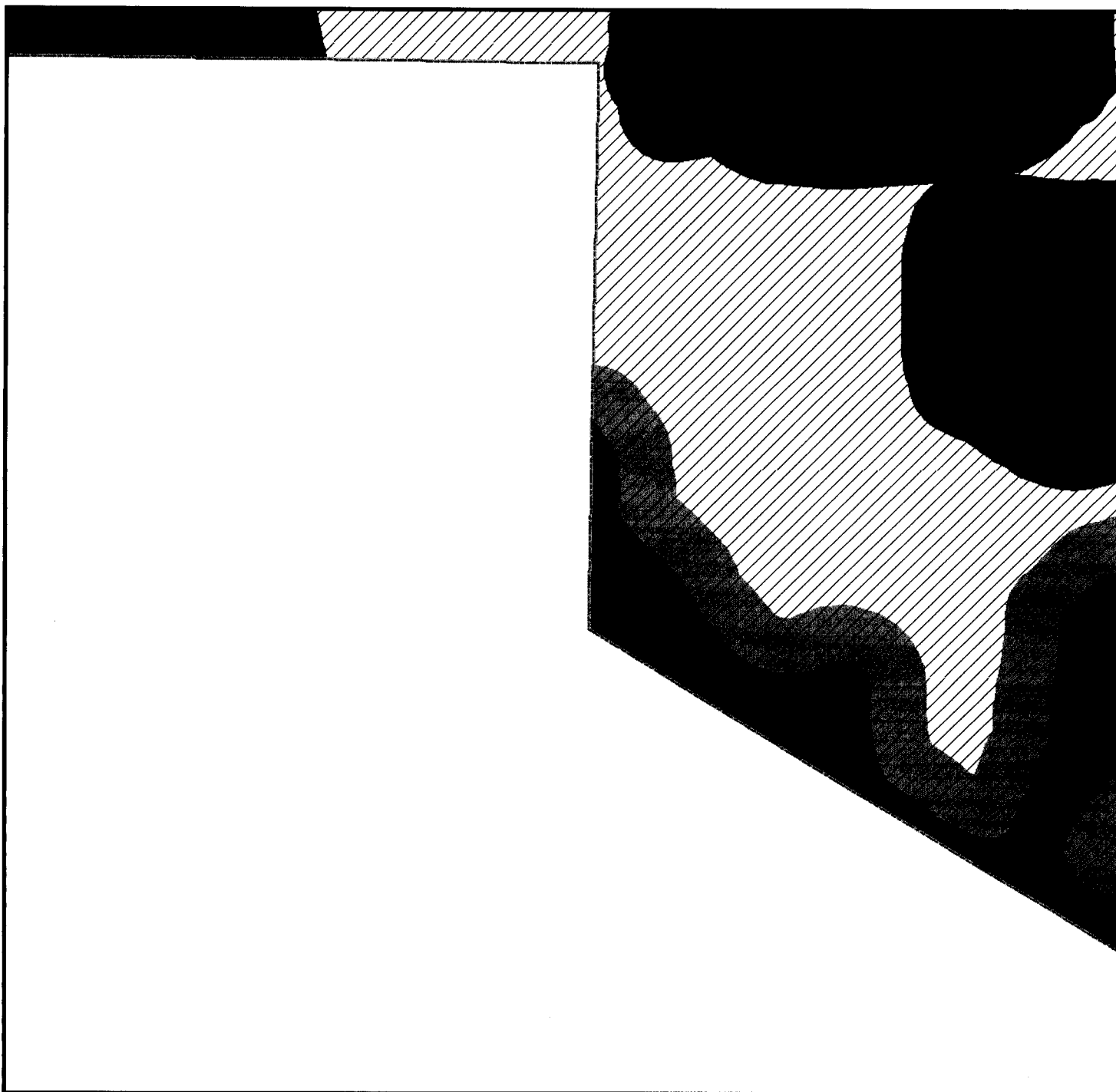
0 100 200 400
Feet
1 in = 400 feet



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**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**











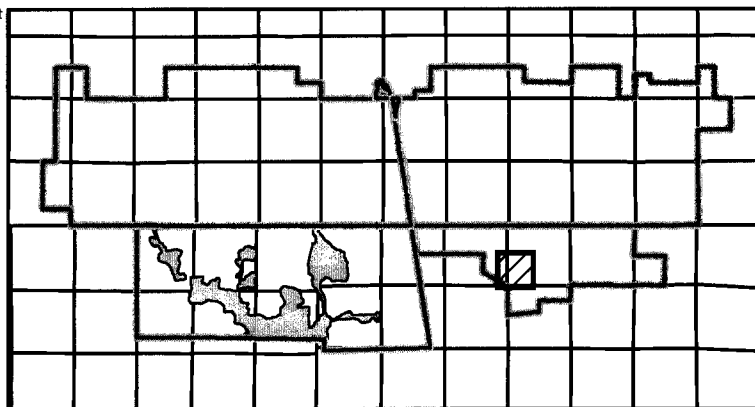
Mosaic

SOUTH PASTURE EXTENSION
Mosaic Fertilizer, LLC
FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP



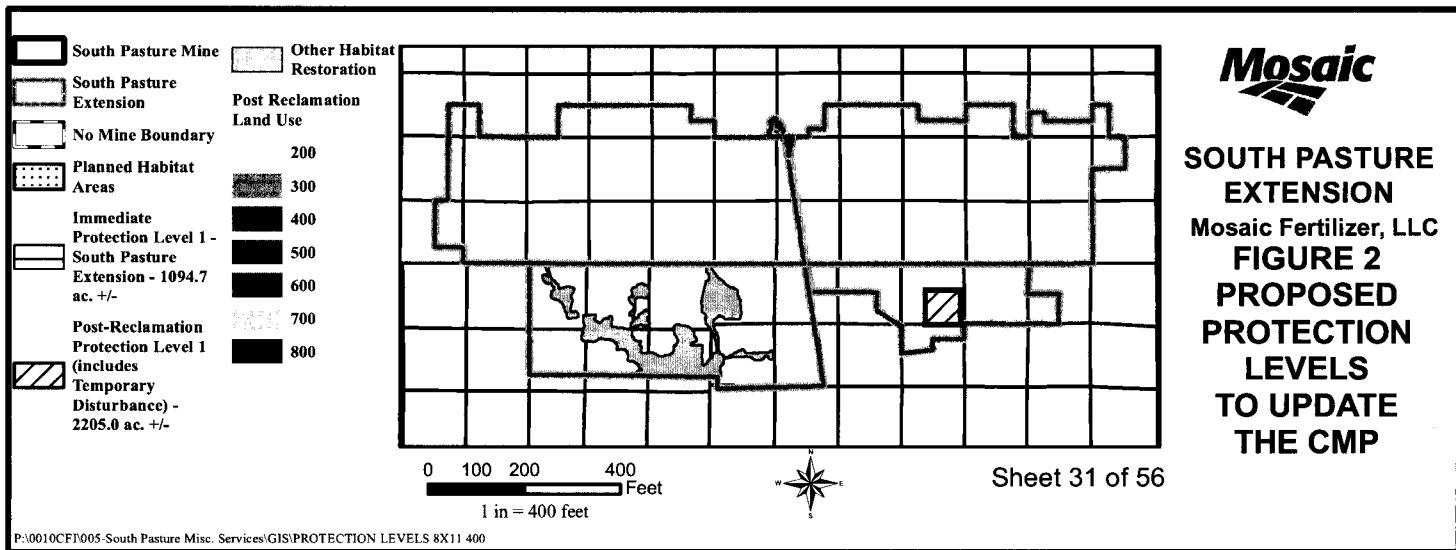
-  South Pasture Mine
-  South Pasture Extension
-  No Mine Boundary
-  Planned Habitat Areas
-  Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
-  Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

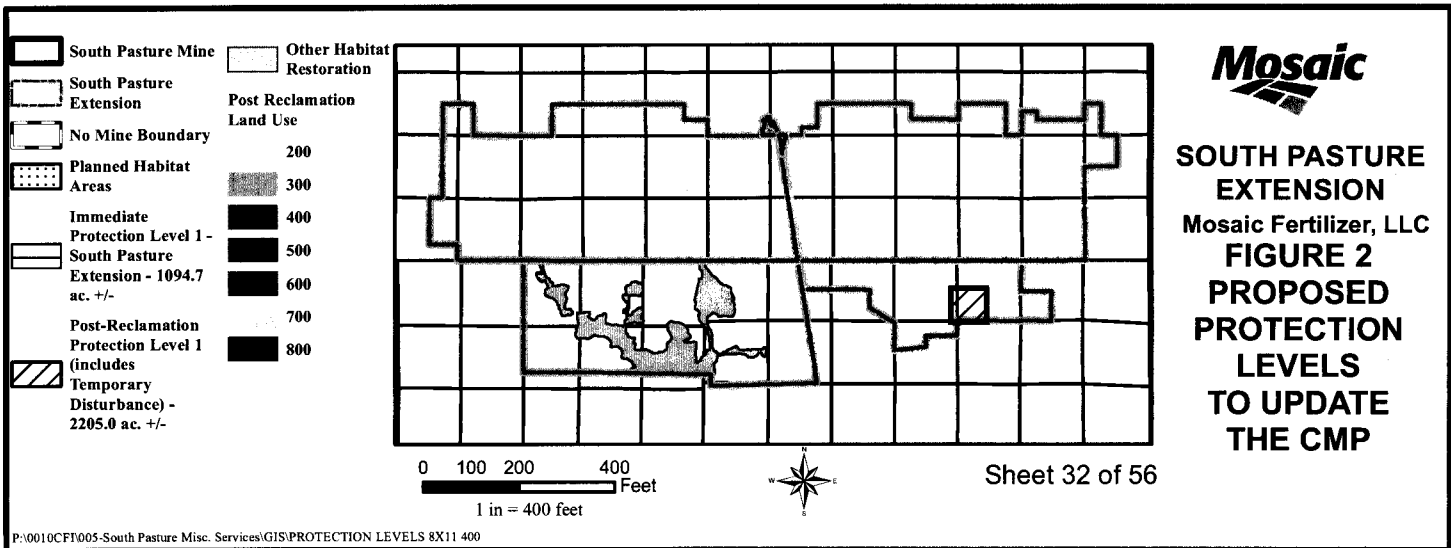
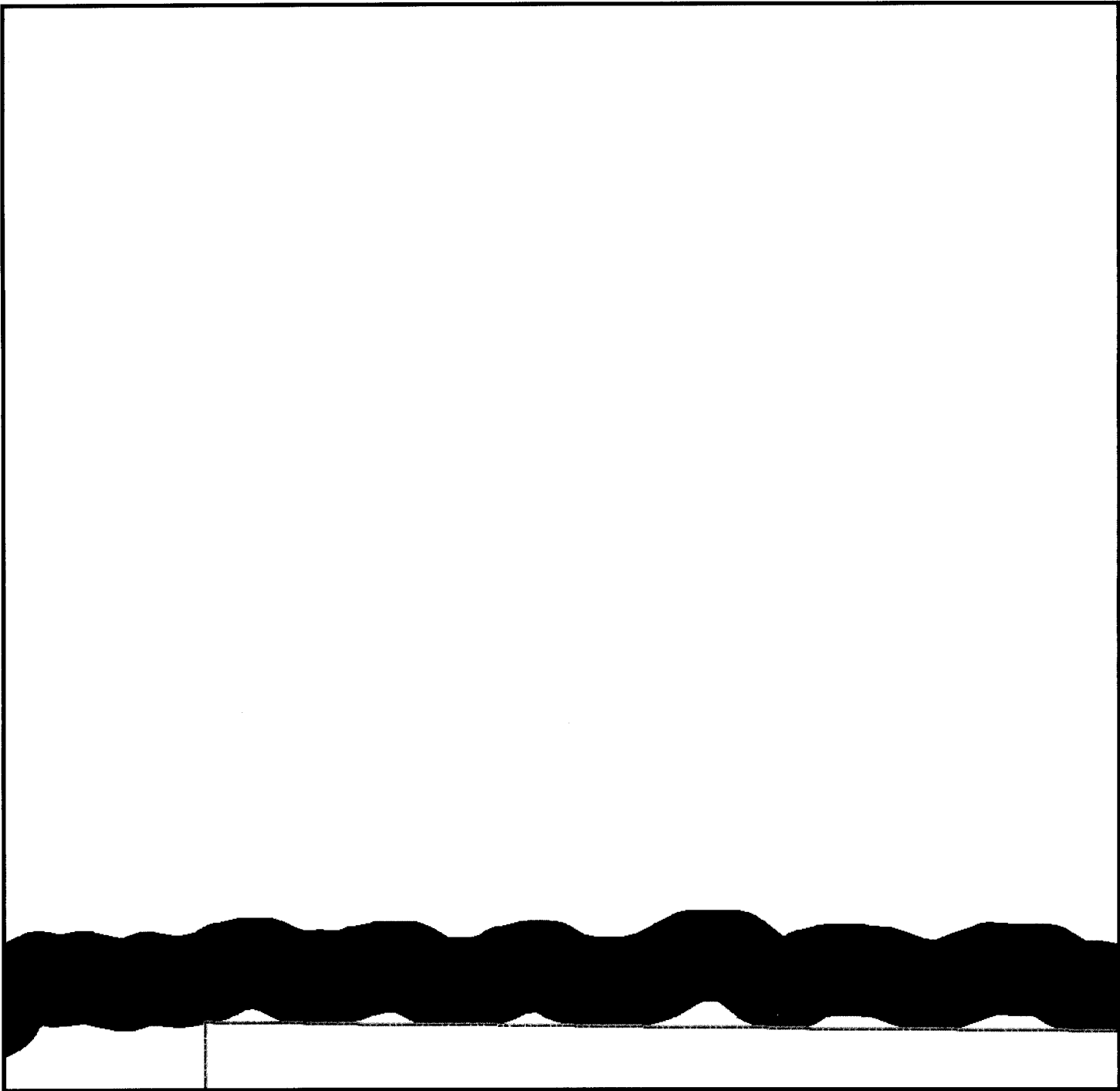
-  Other Habitat Restoration
- Post Reclamation Land Use**
-  200
-  300
-  400
-  500
-  600
-  700
-  800

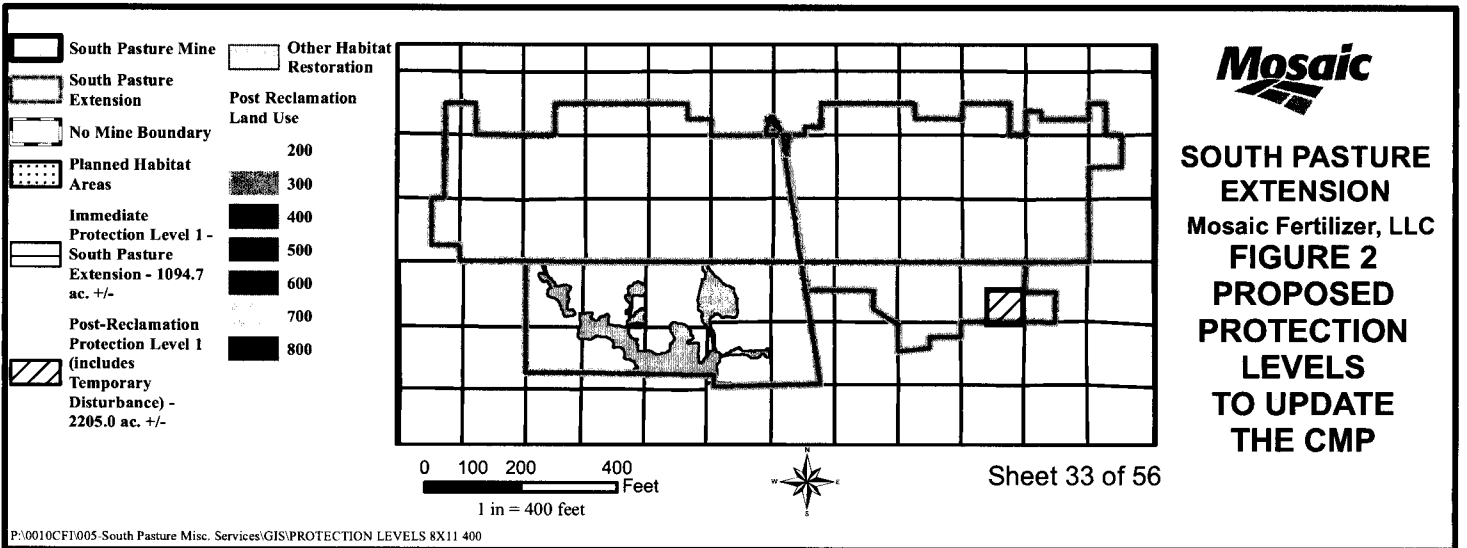
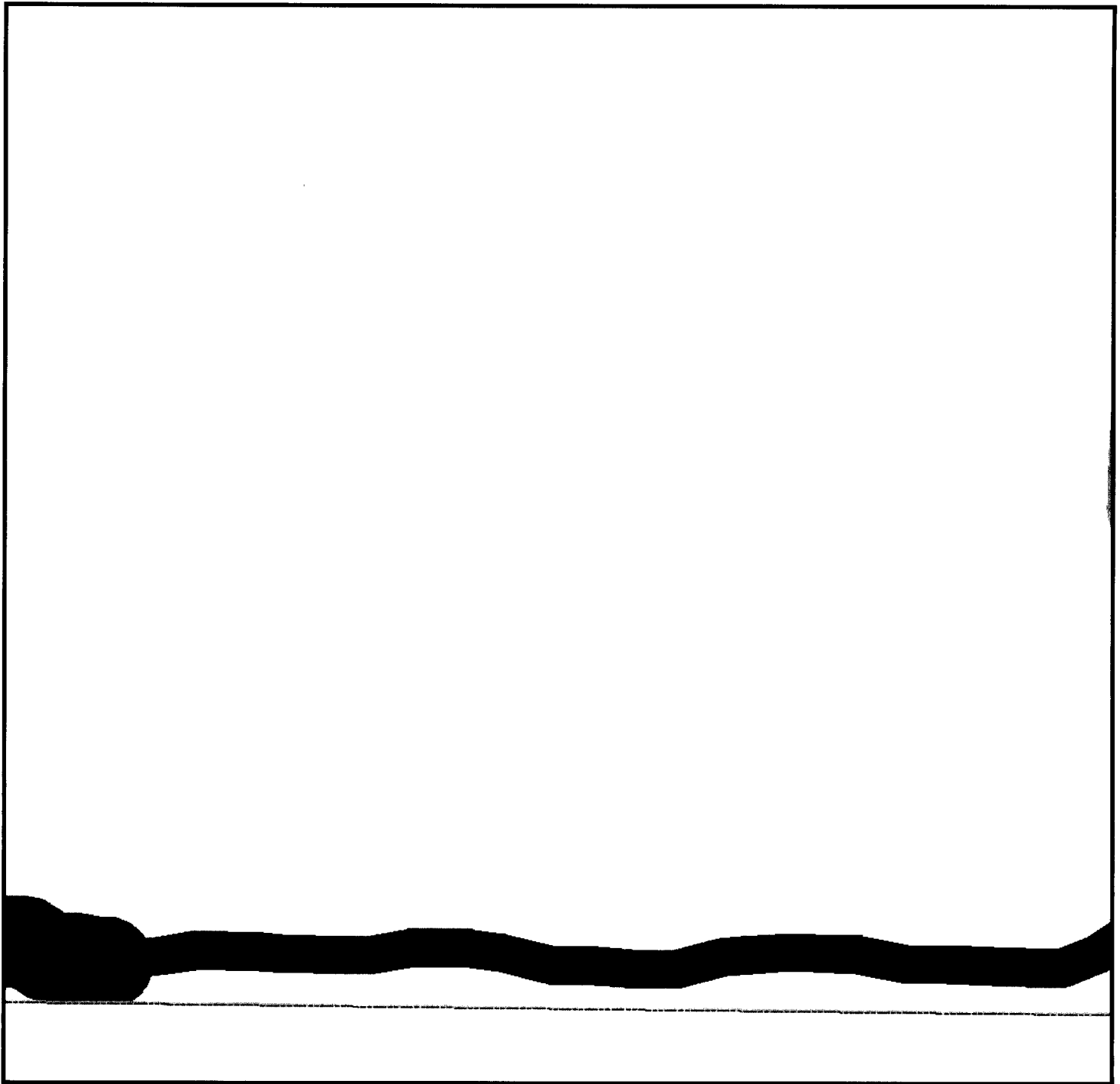


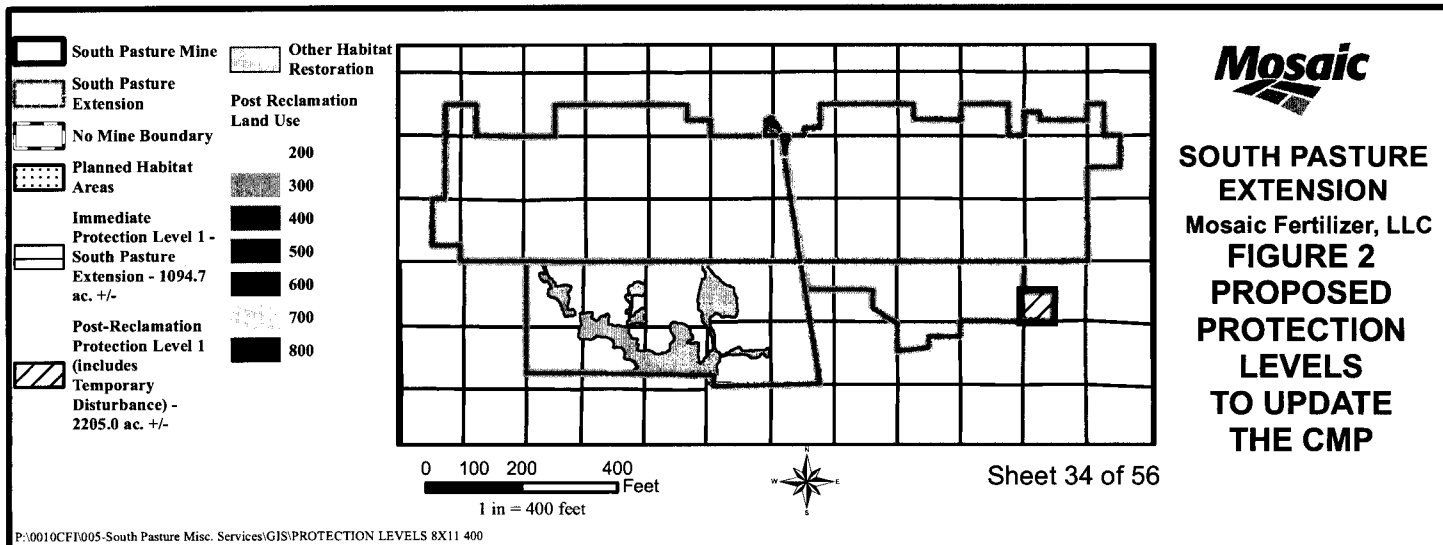
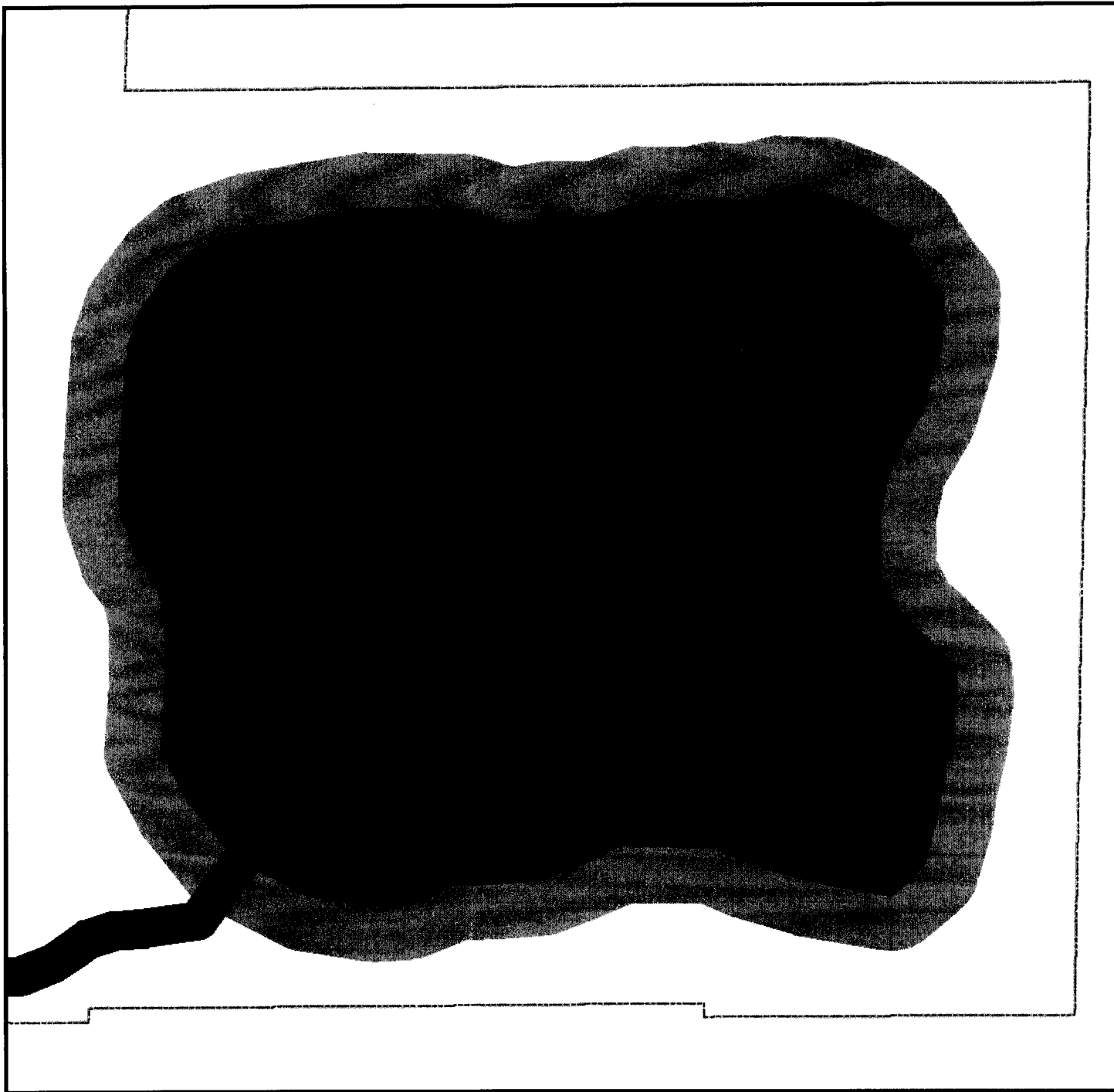
**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

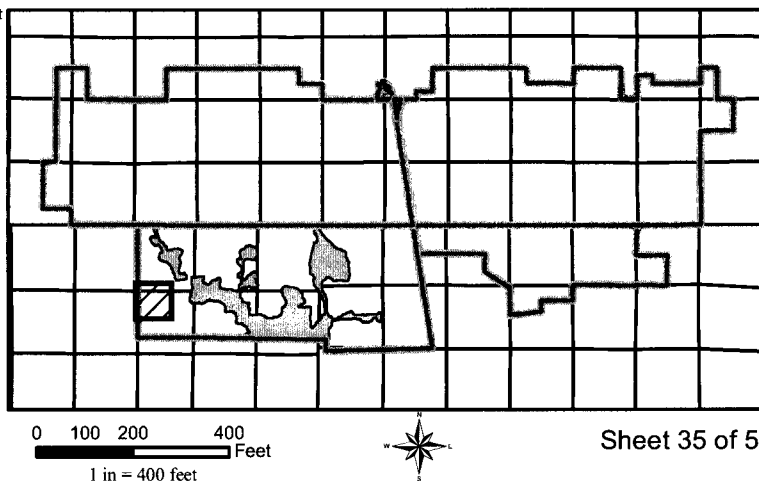
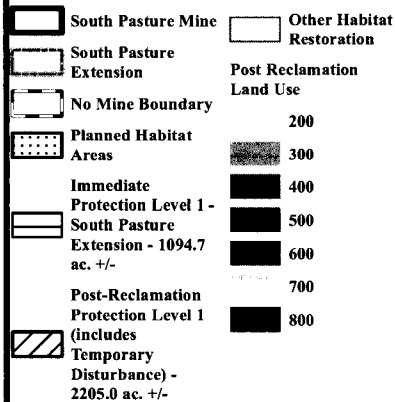
Sheet 30 of 56



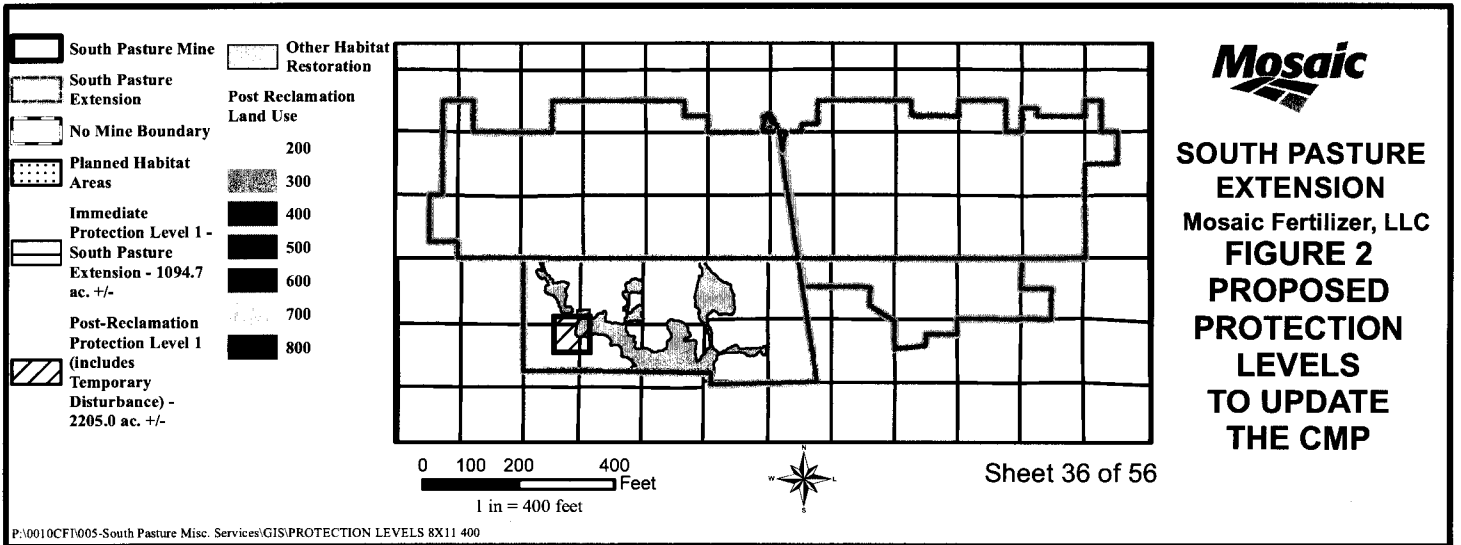


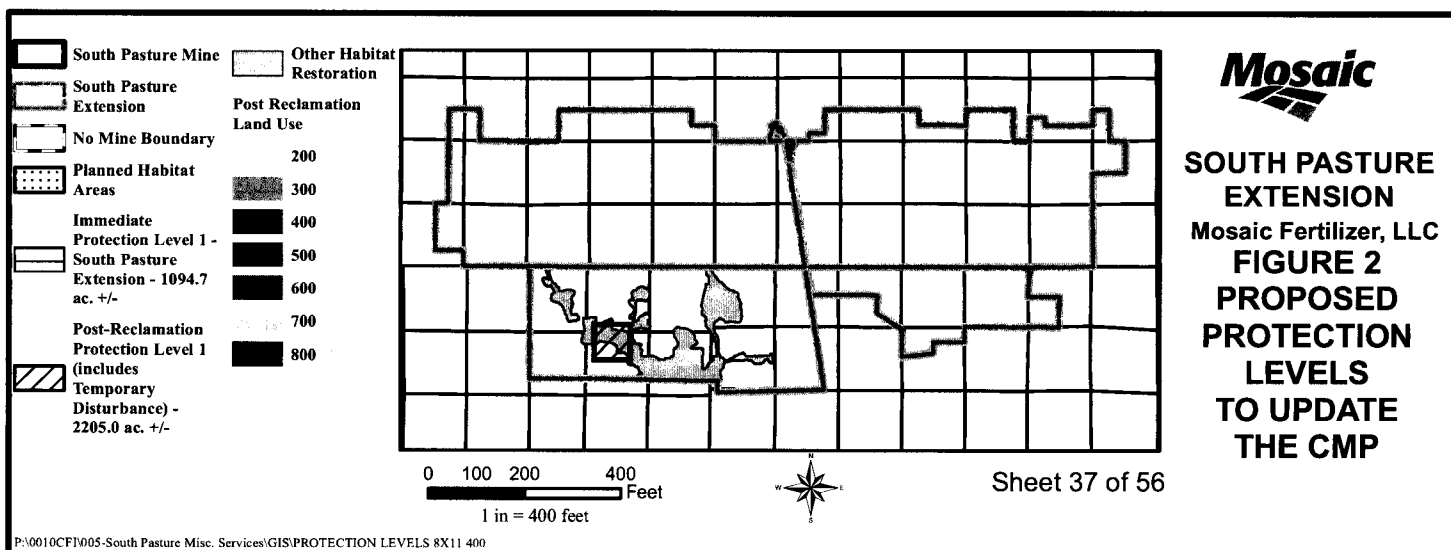


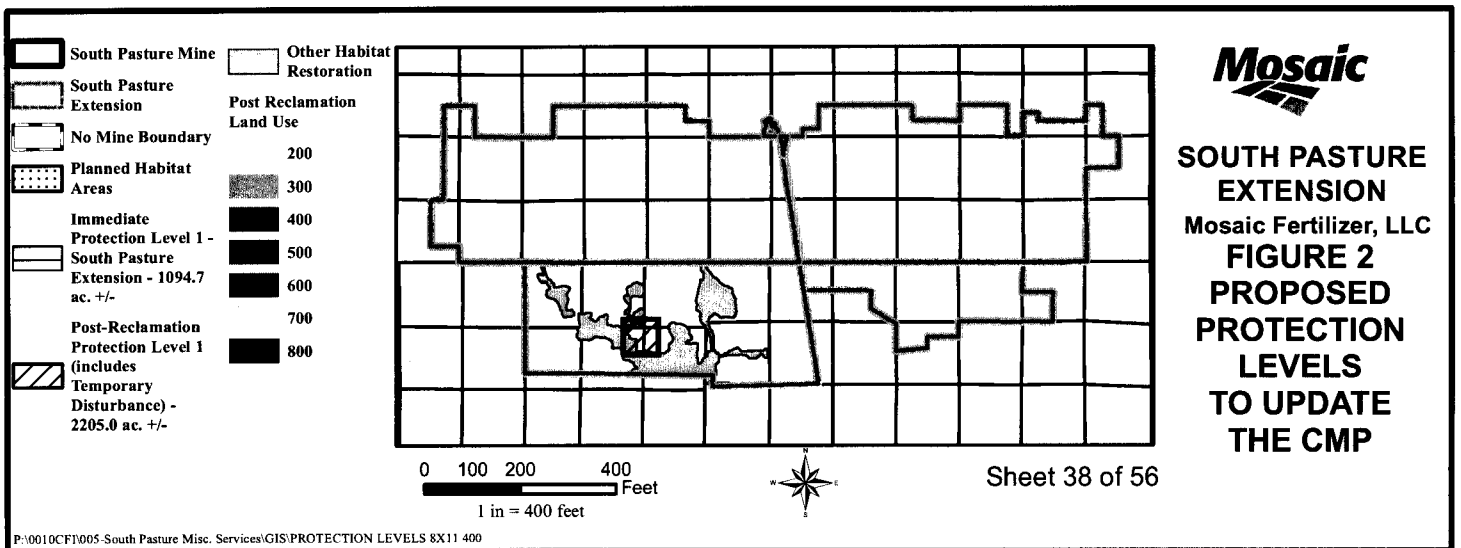
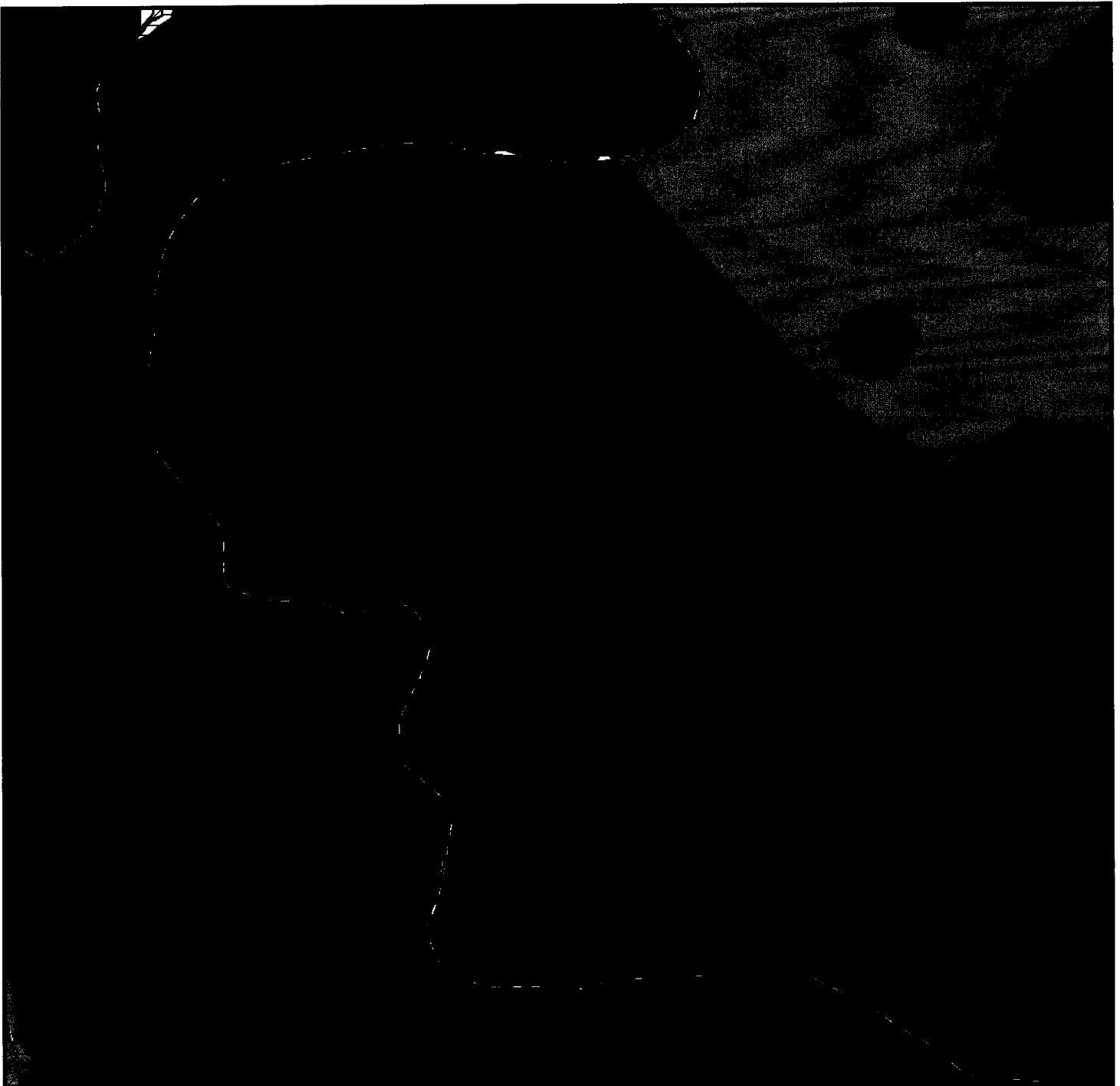


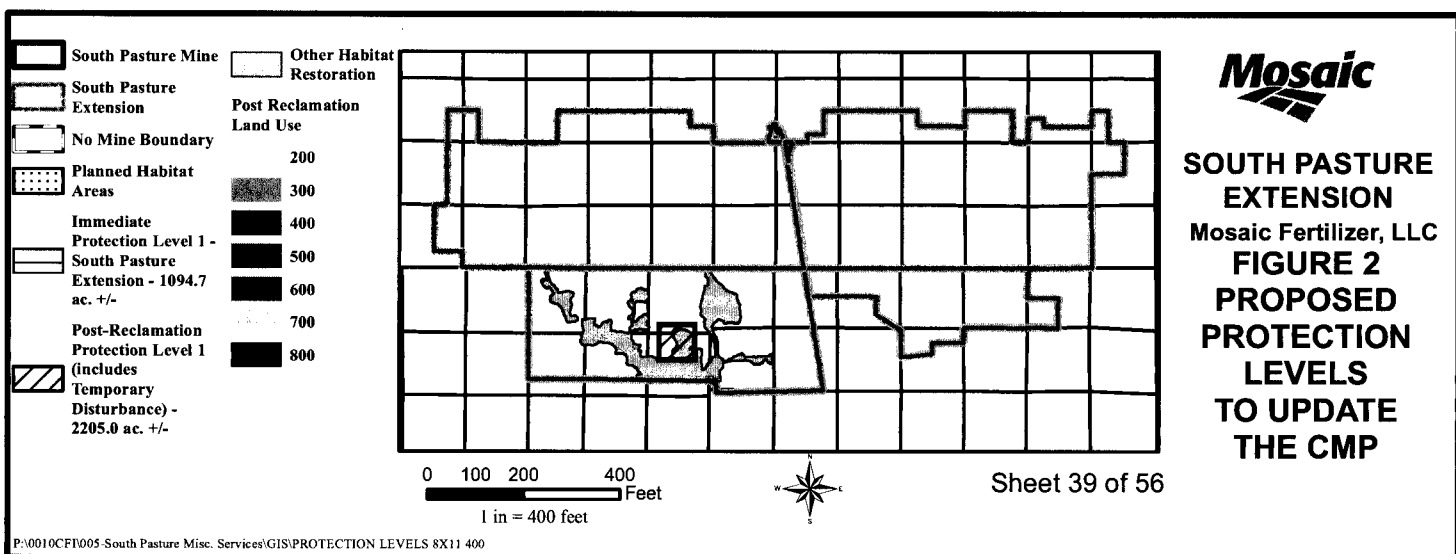


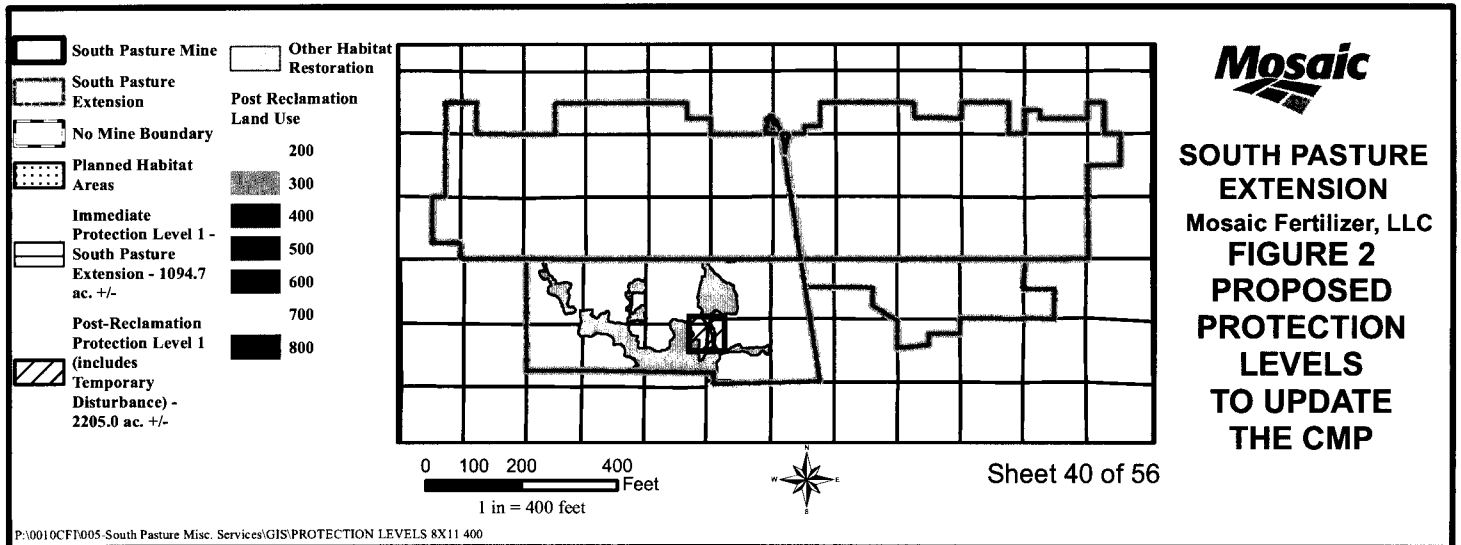
**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

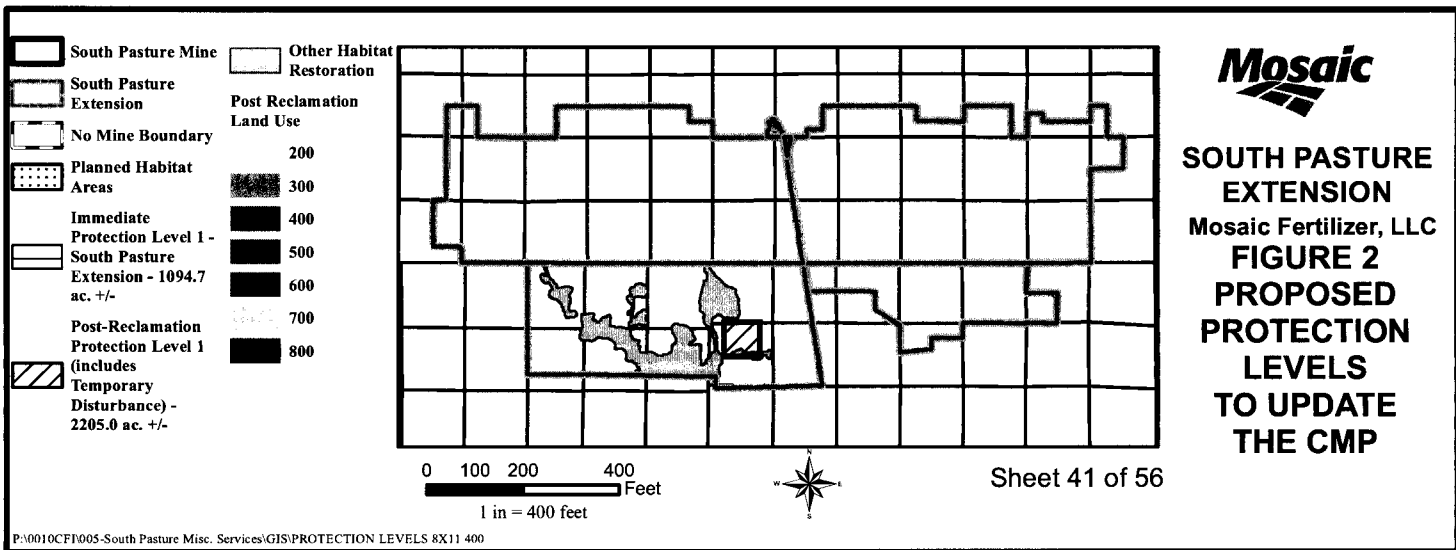


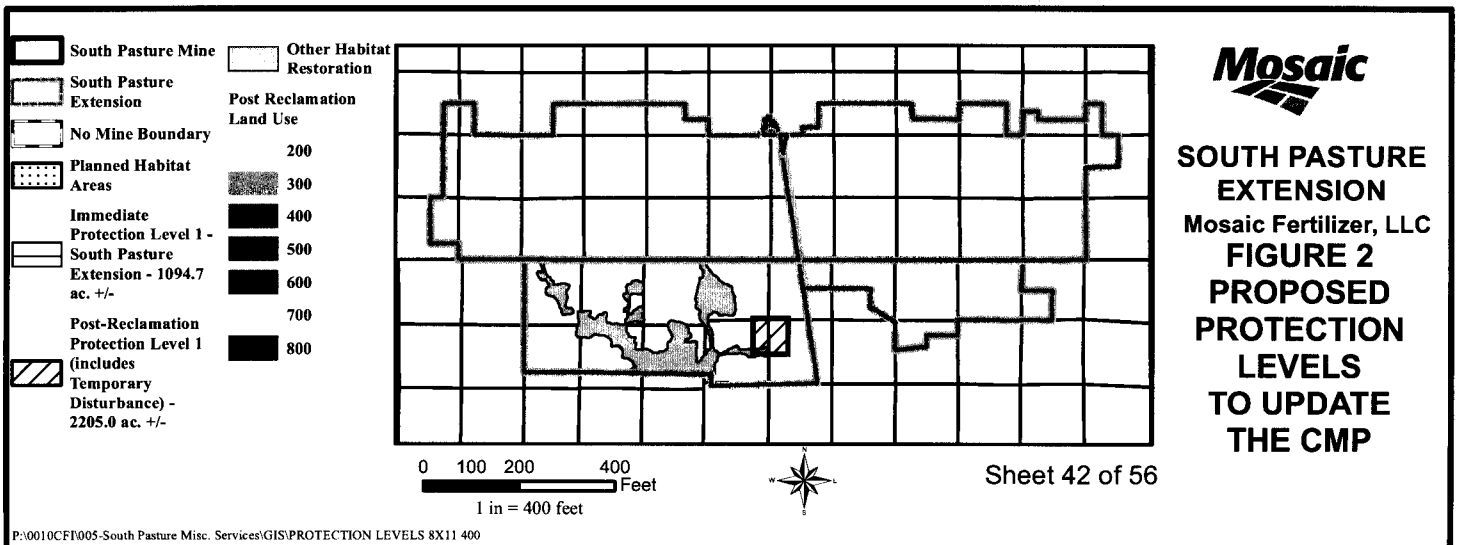


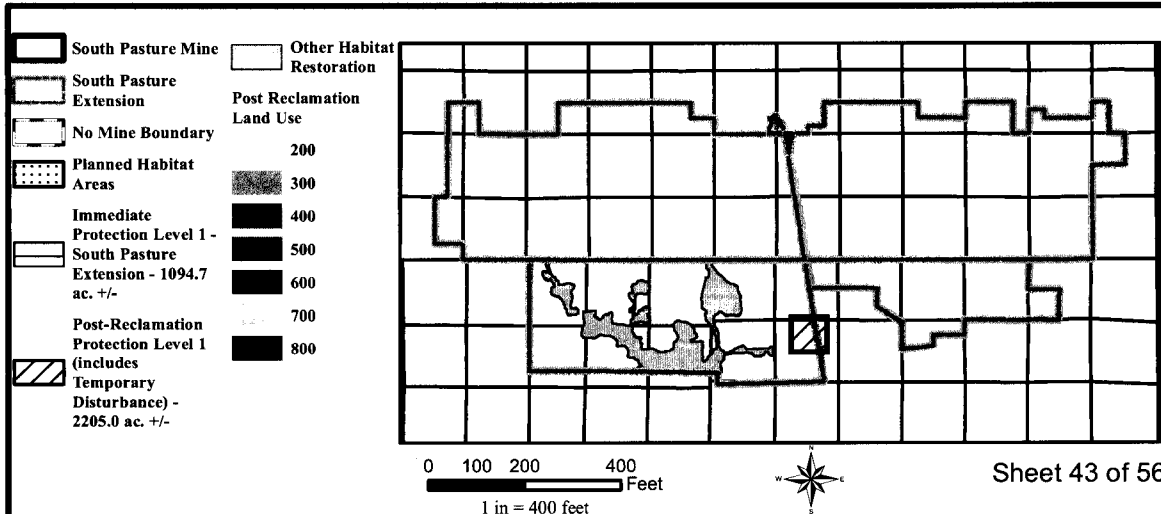




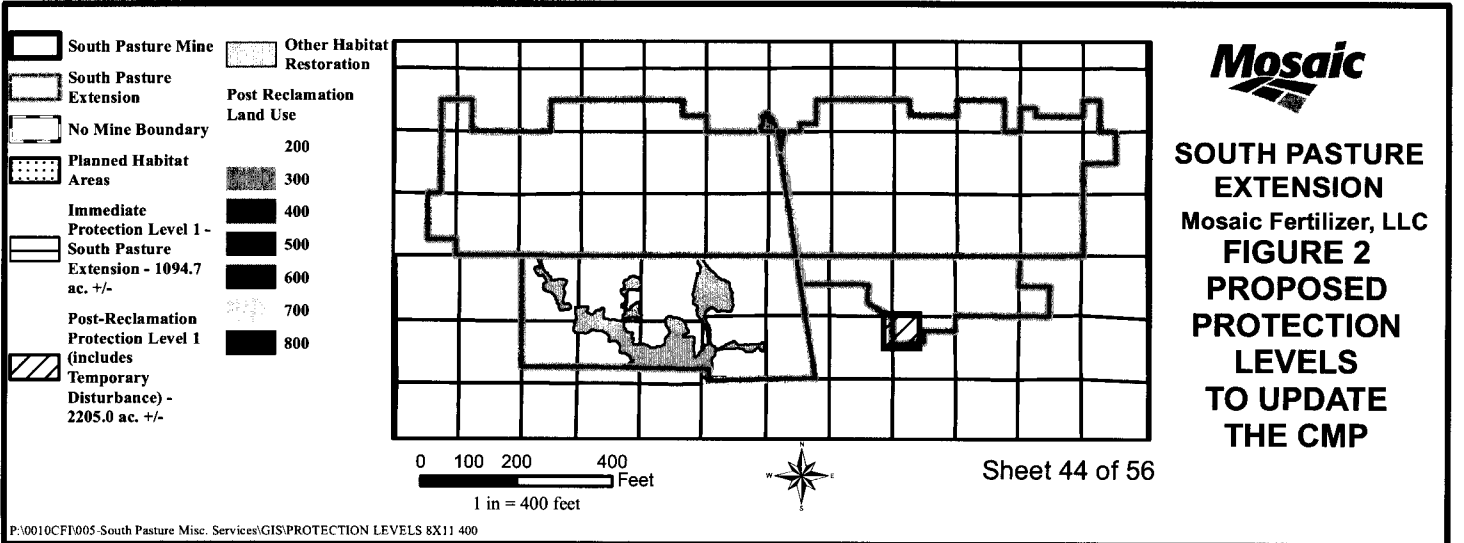
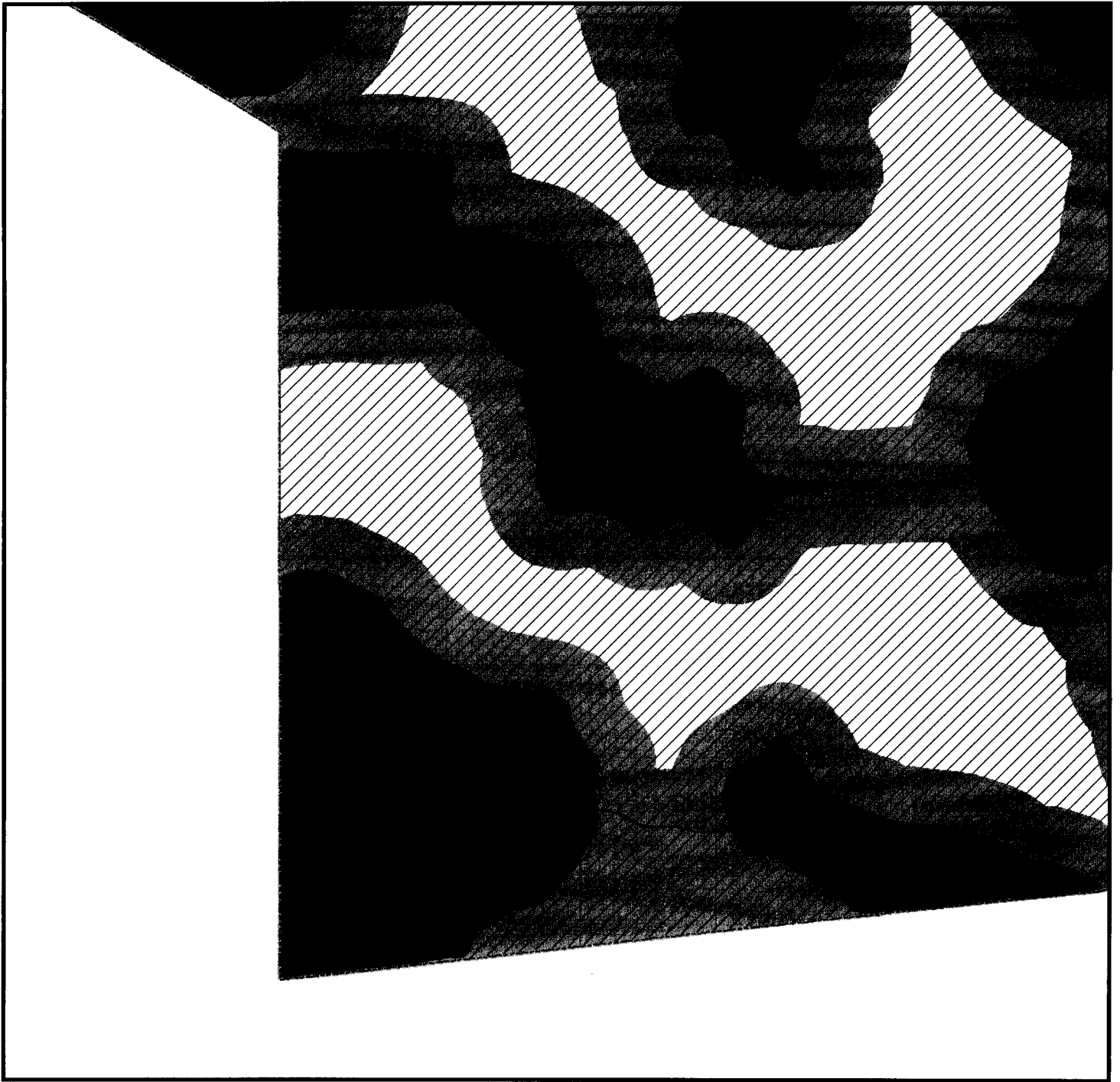


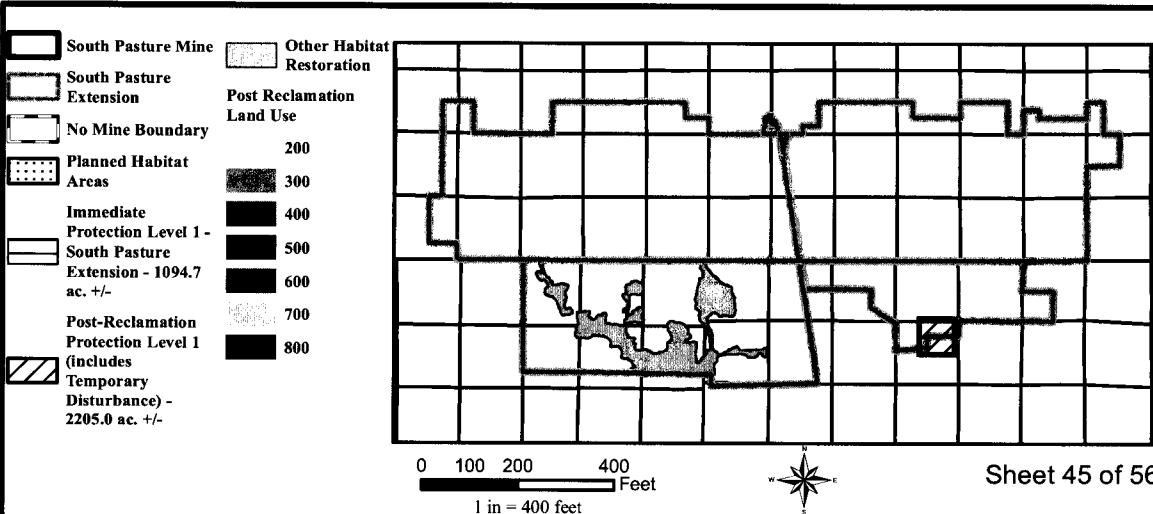
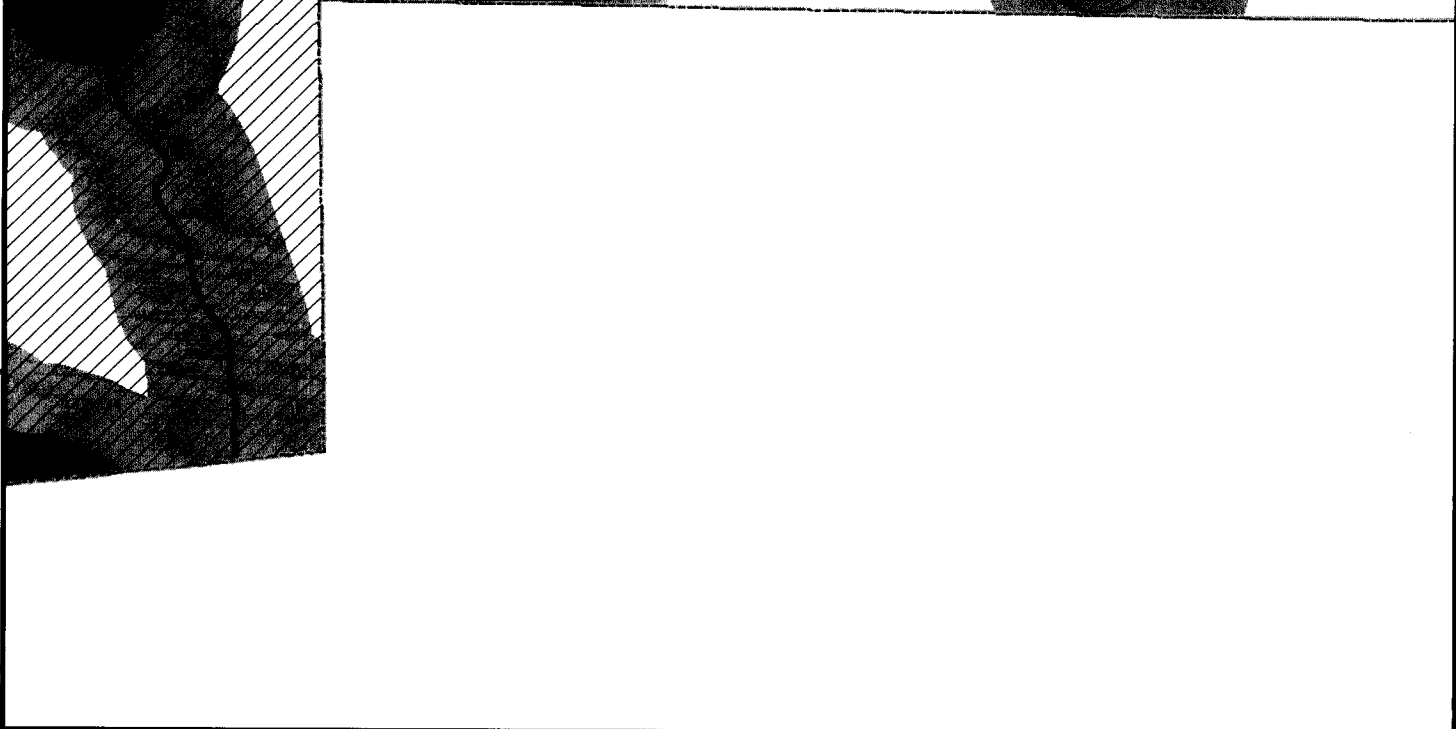
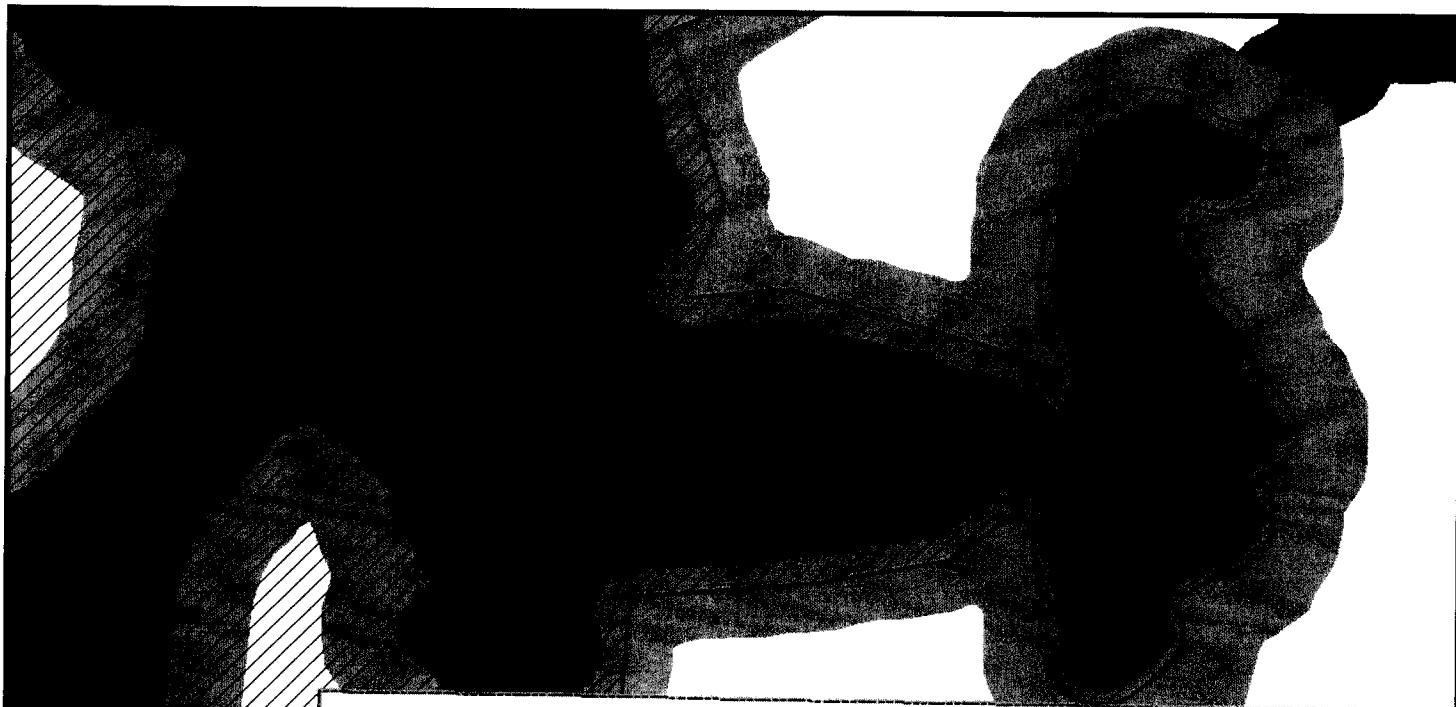




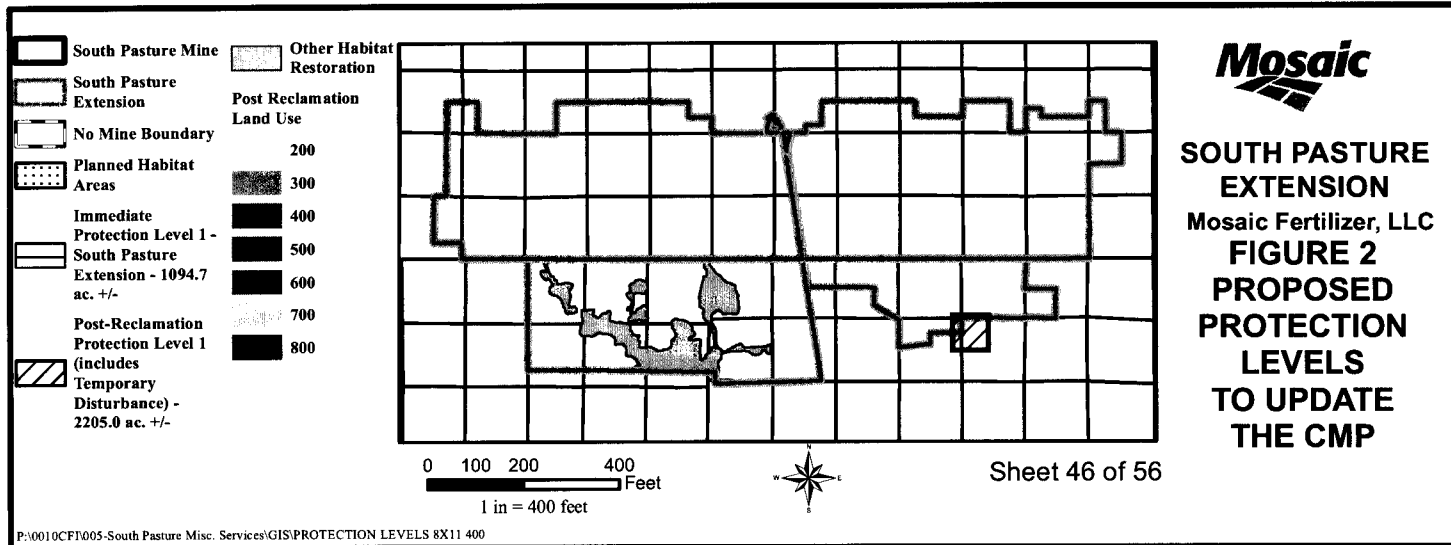


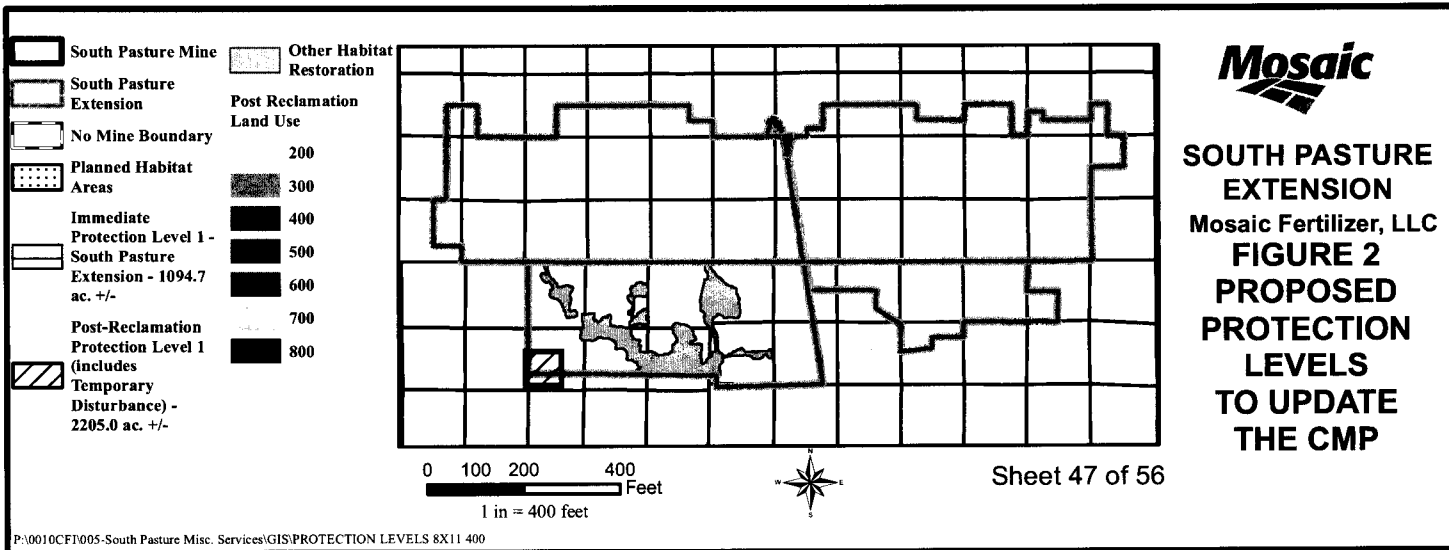
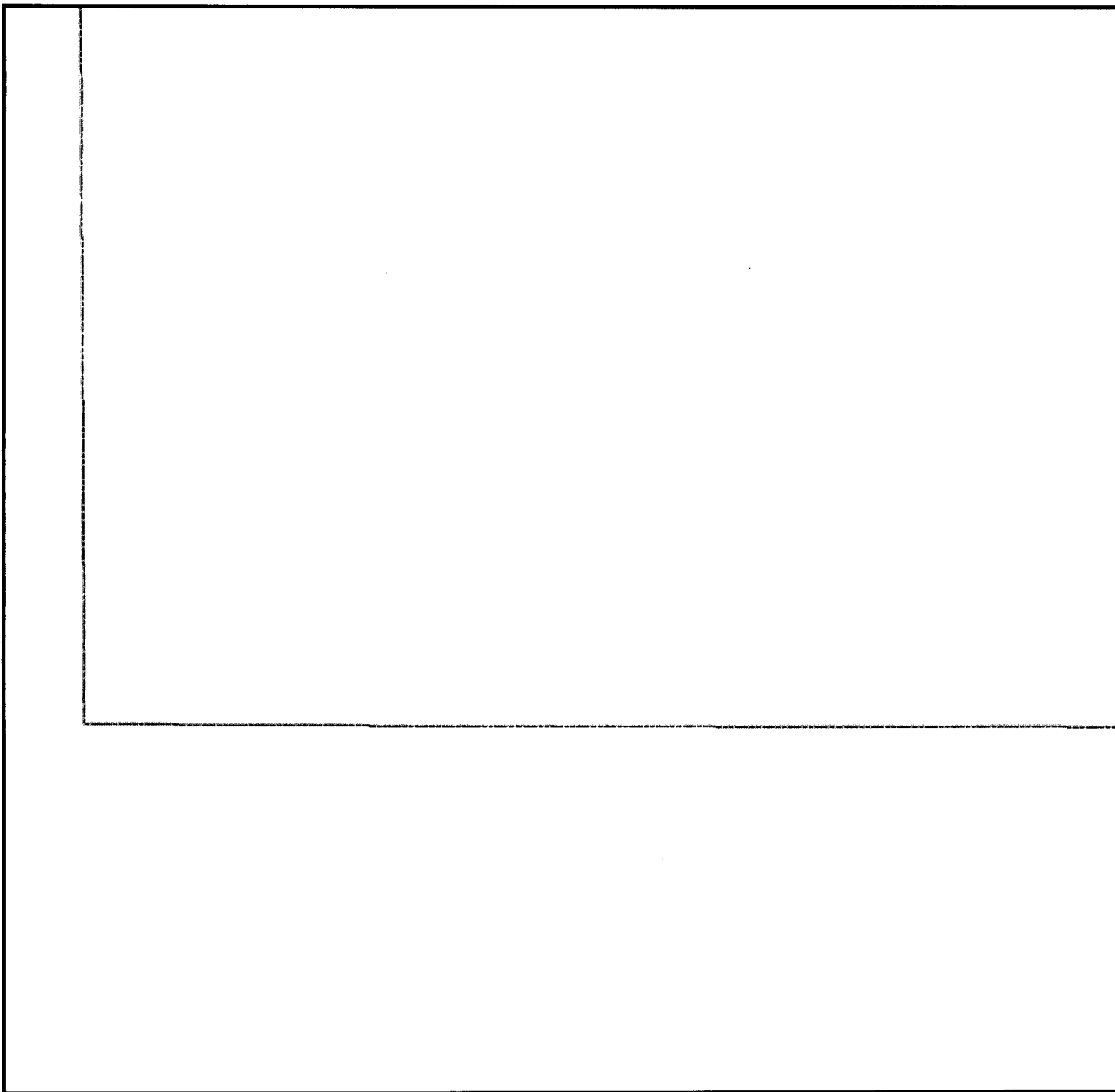
**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

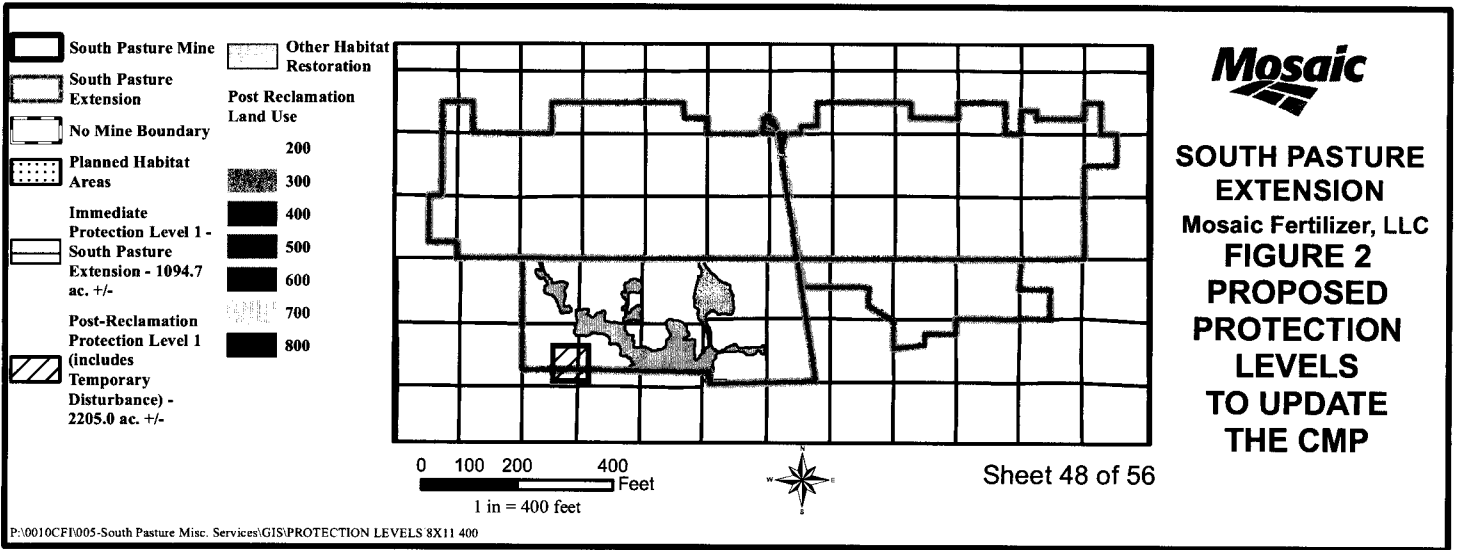
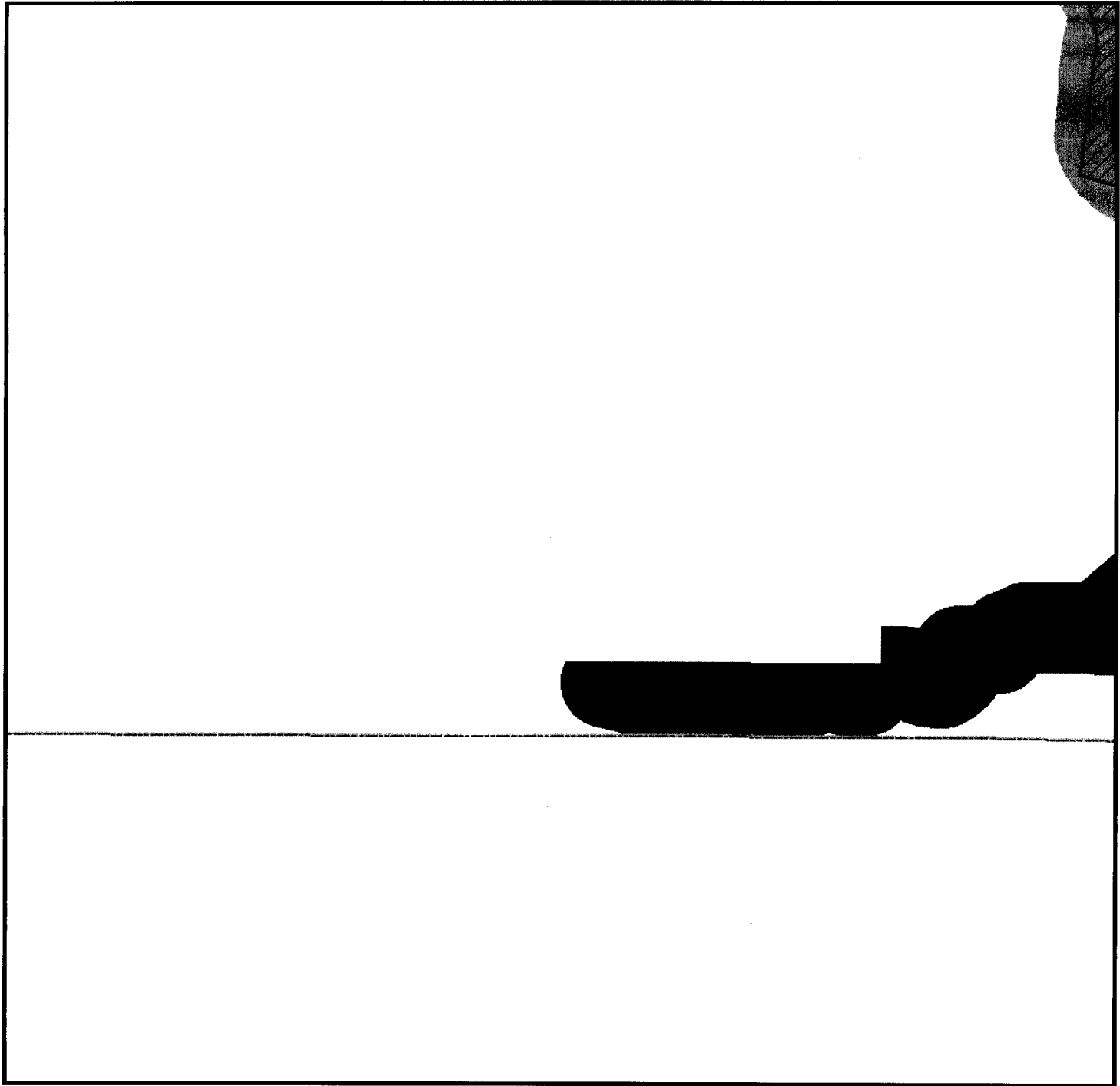


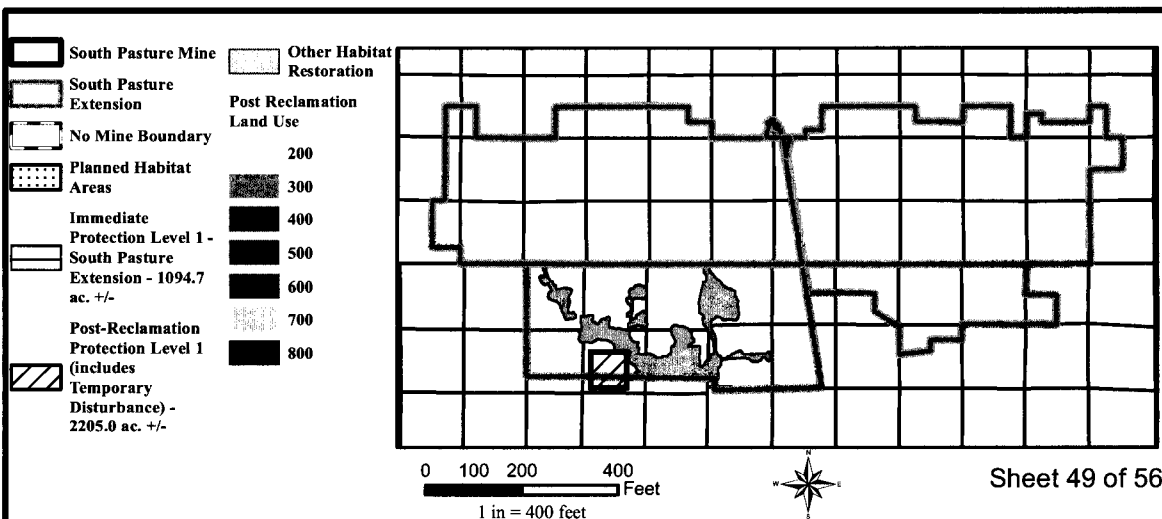
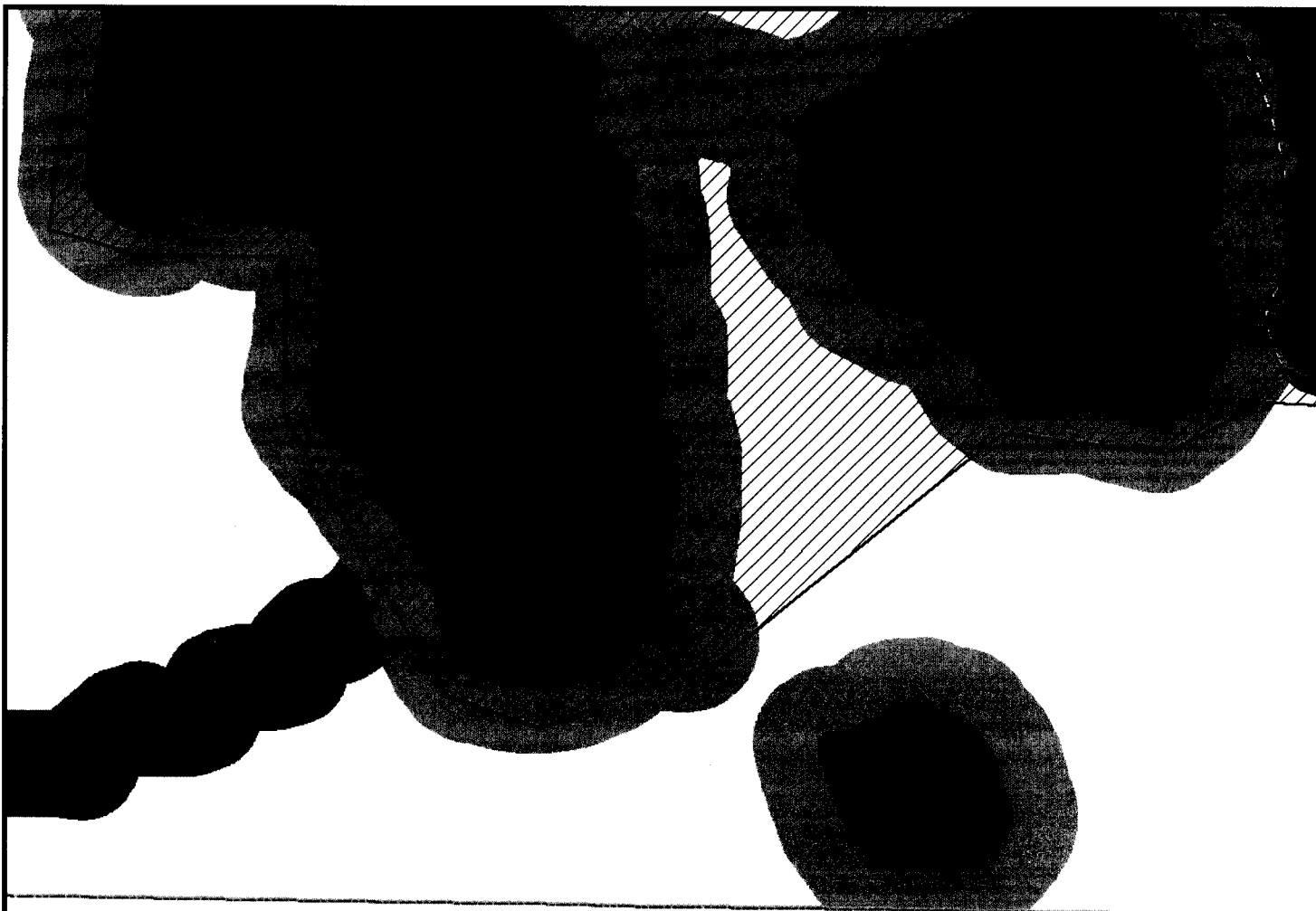


**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



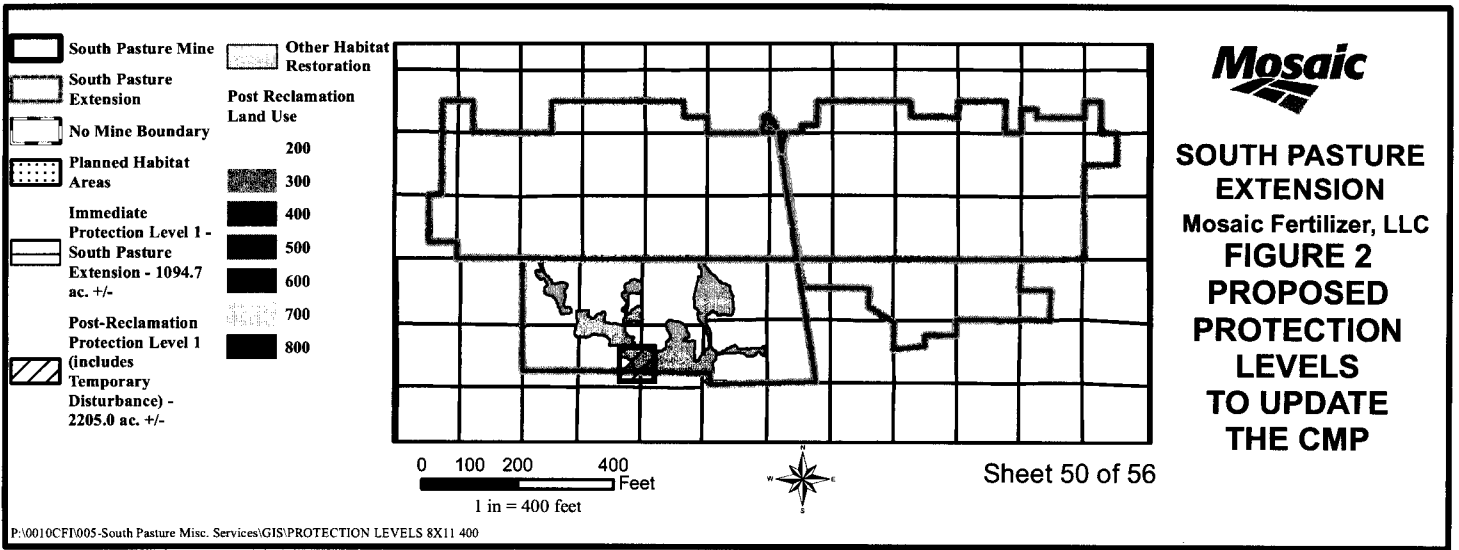
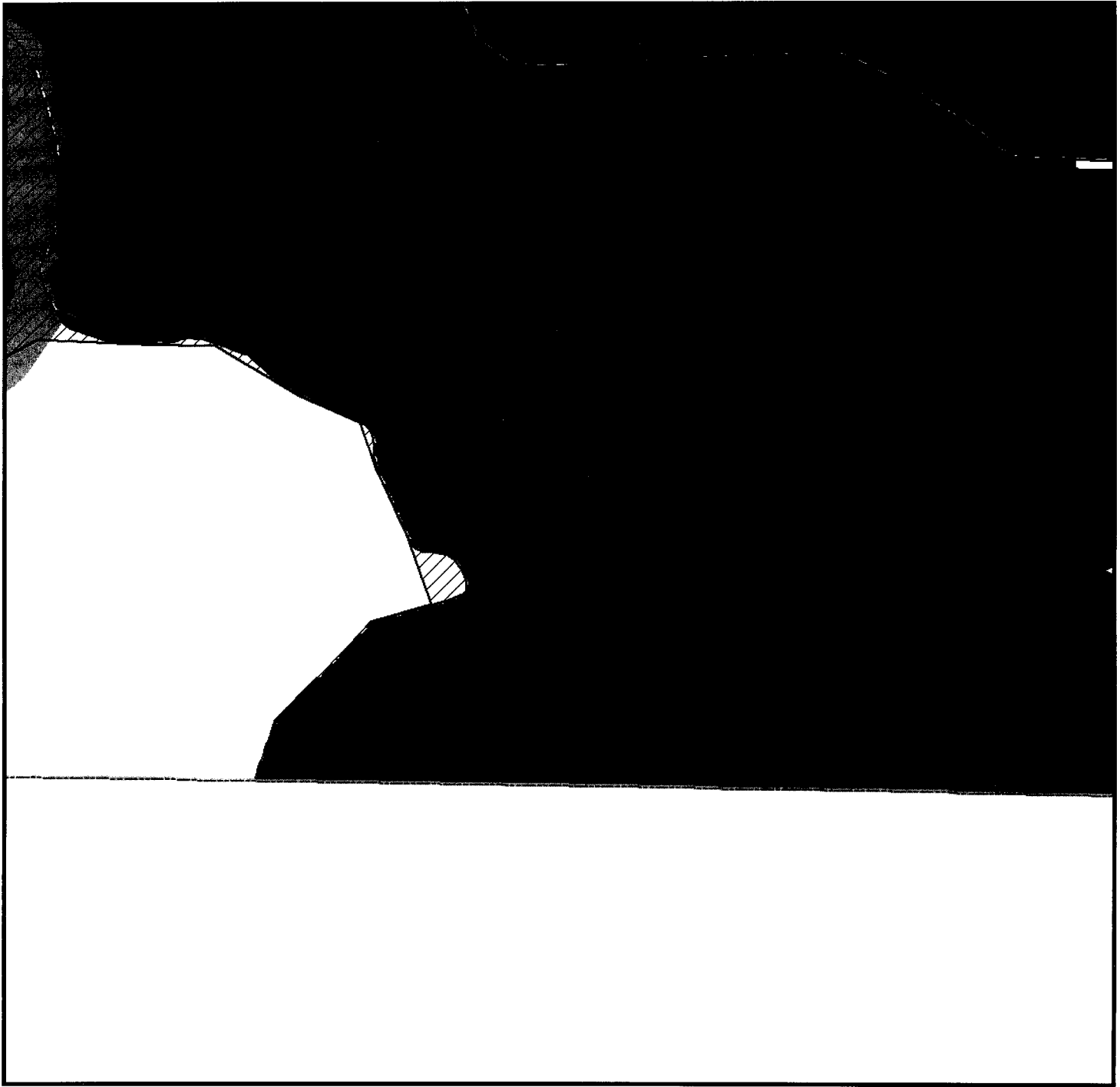


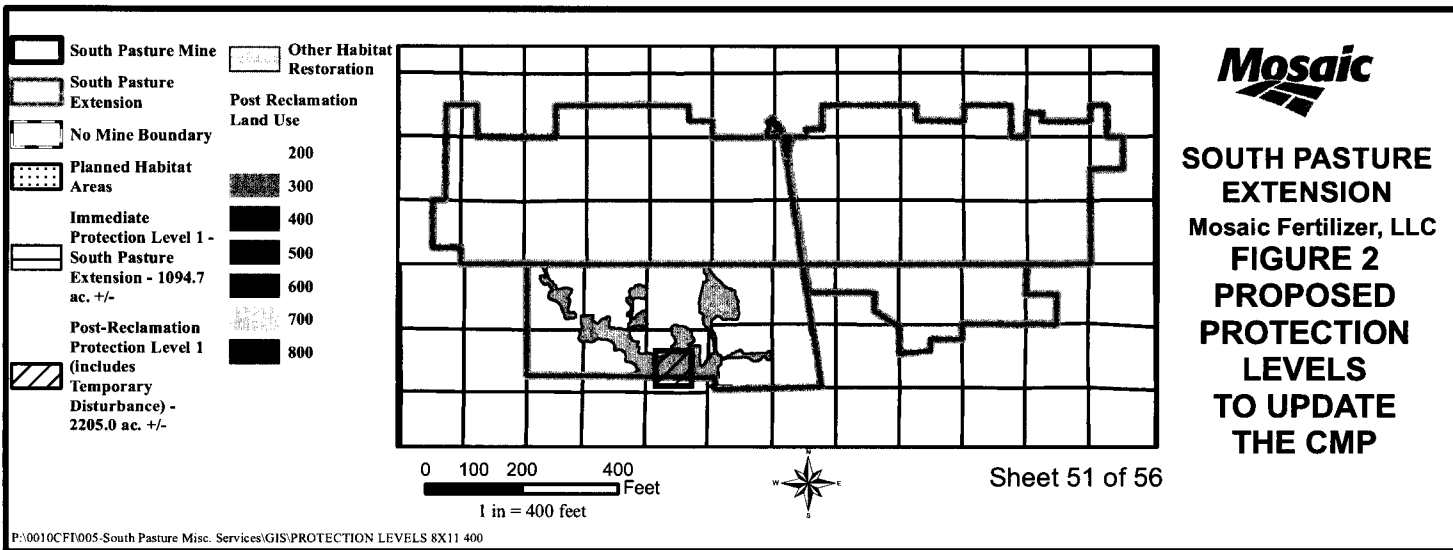
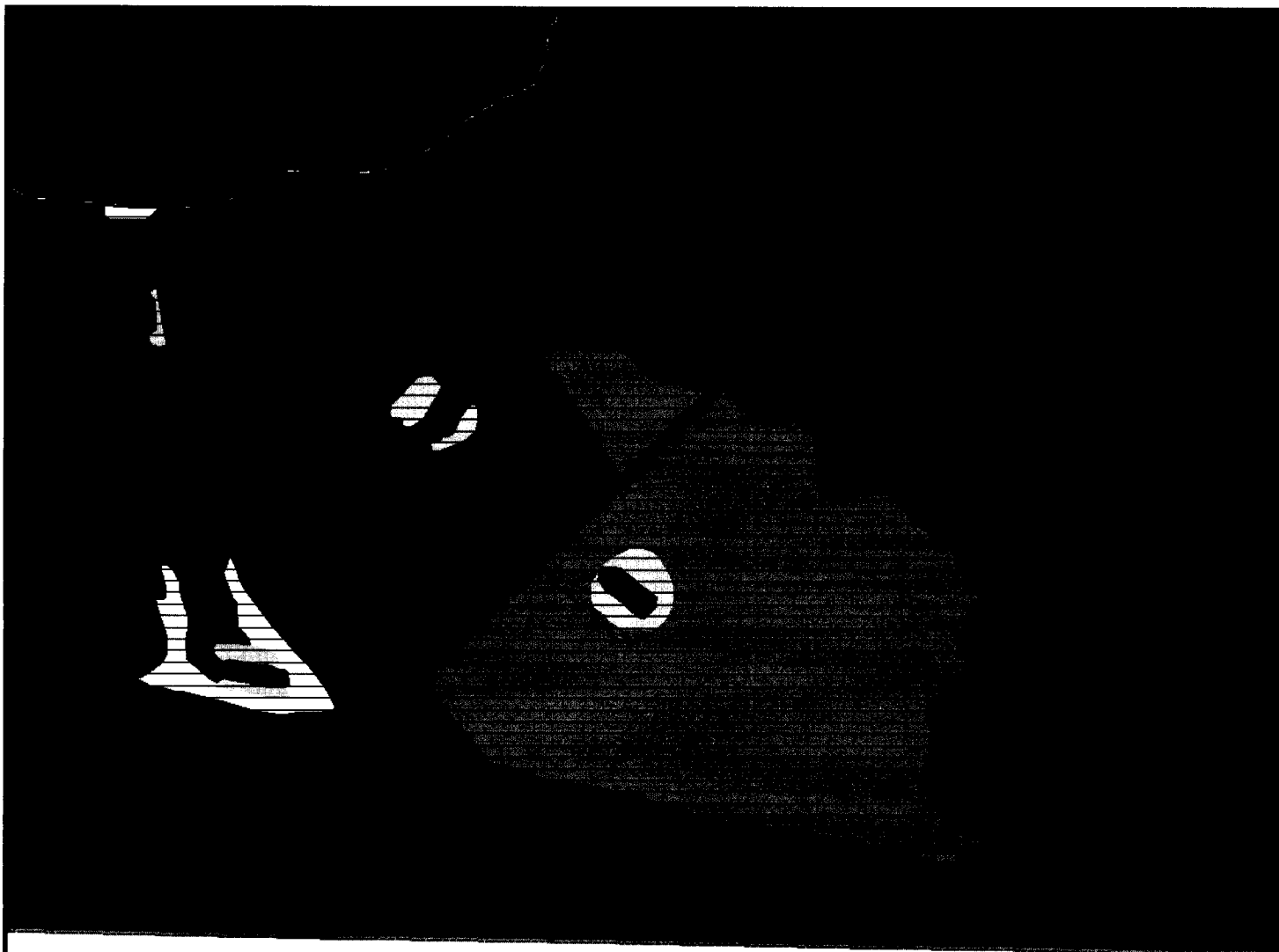


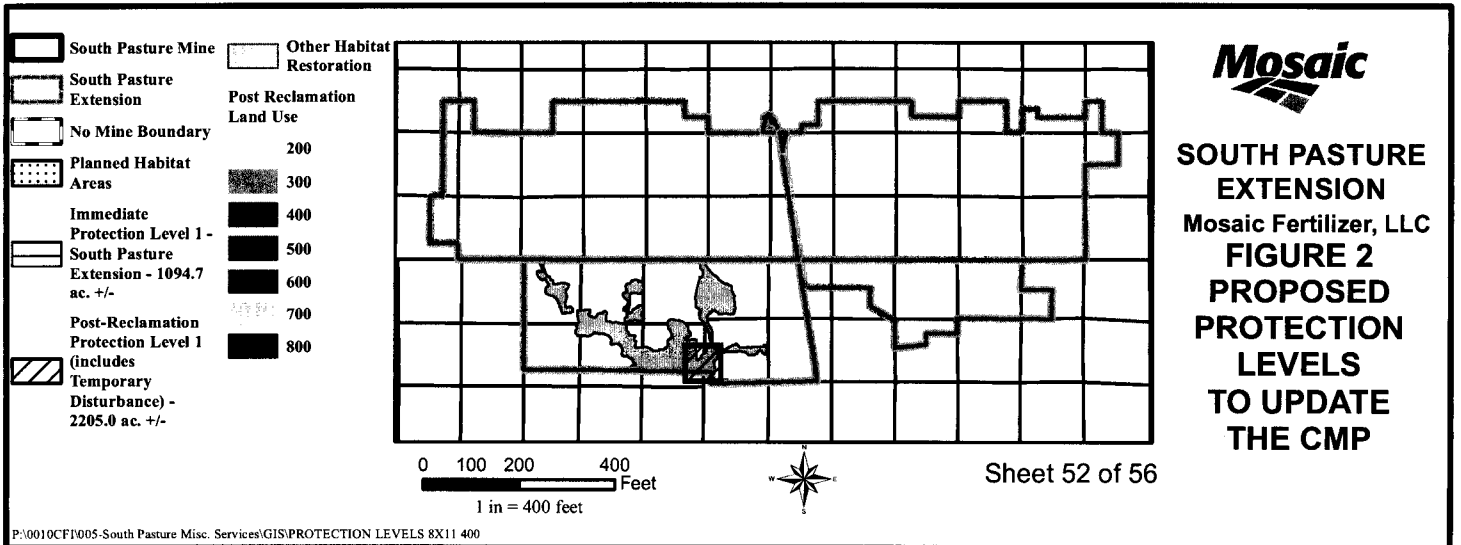


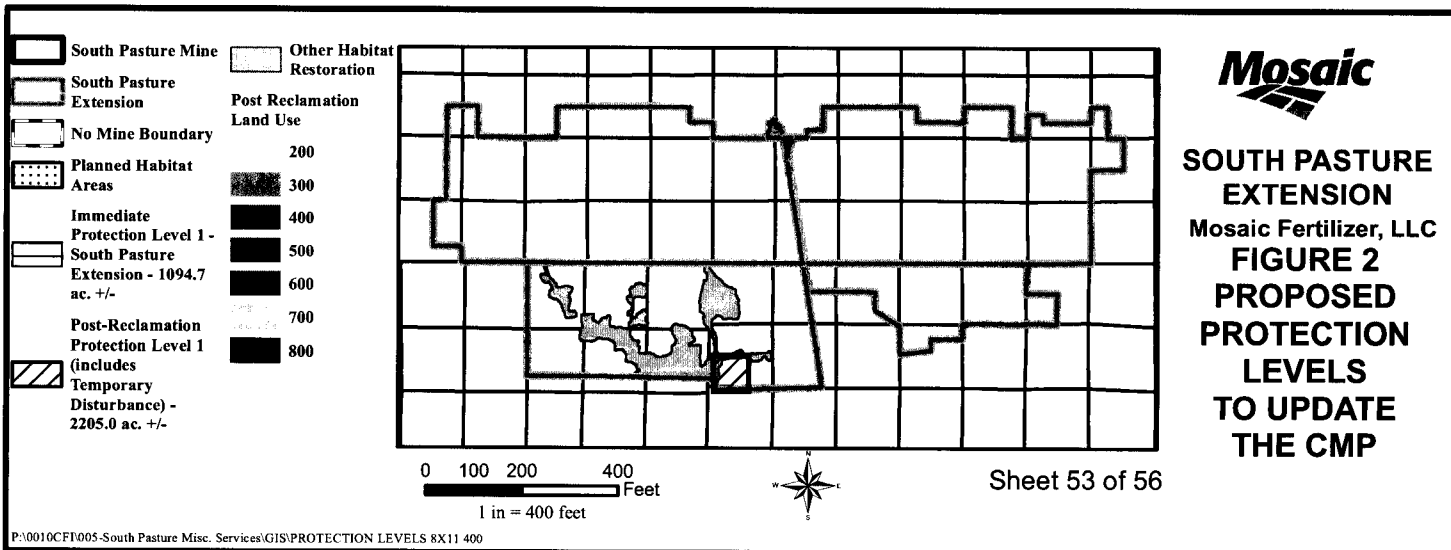
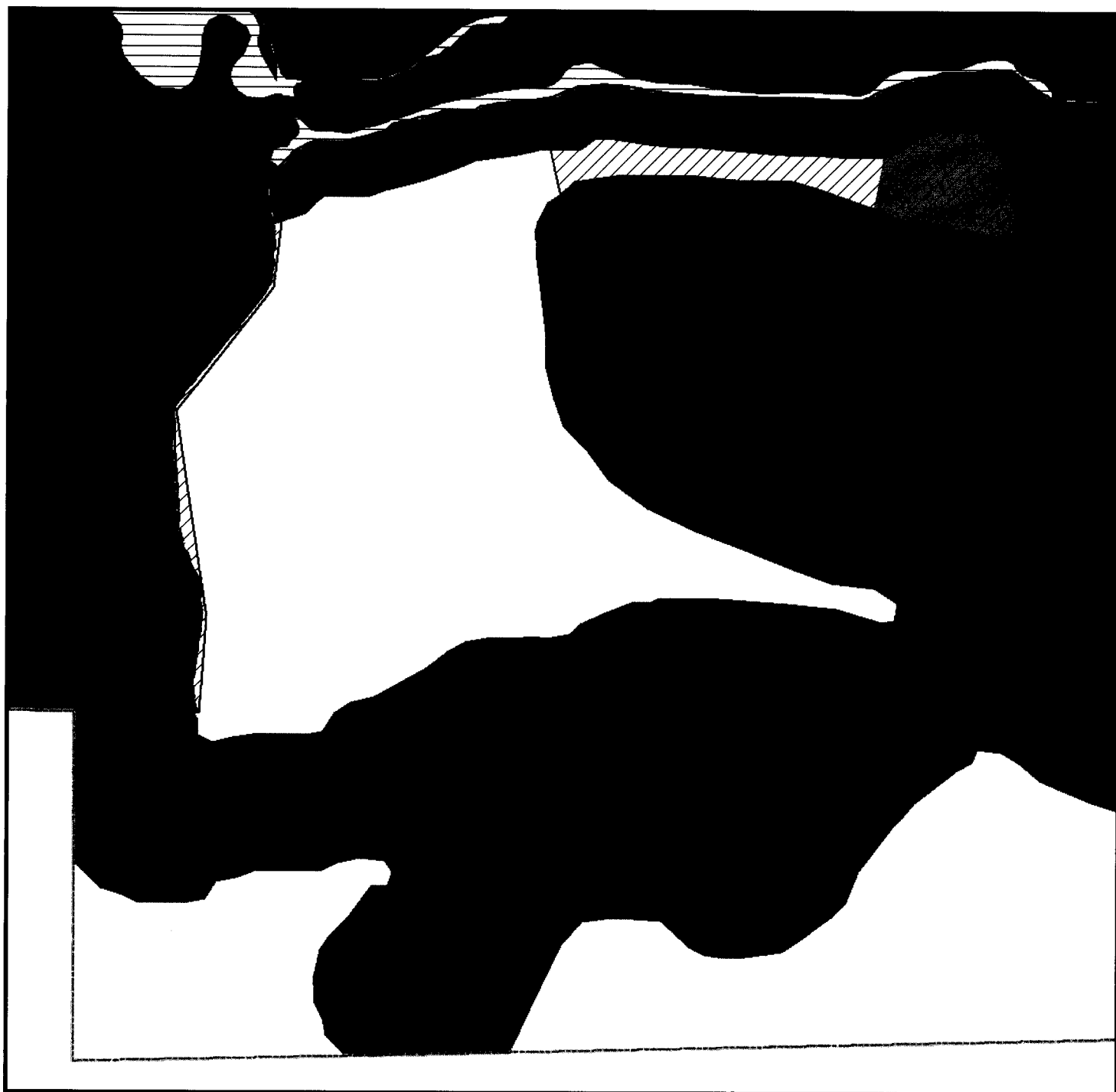
Mosaic

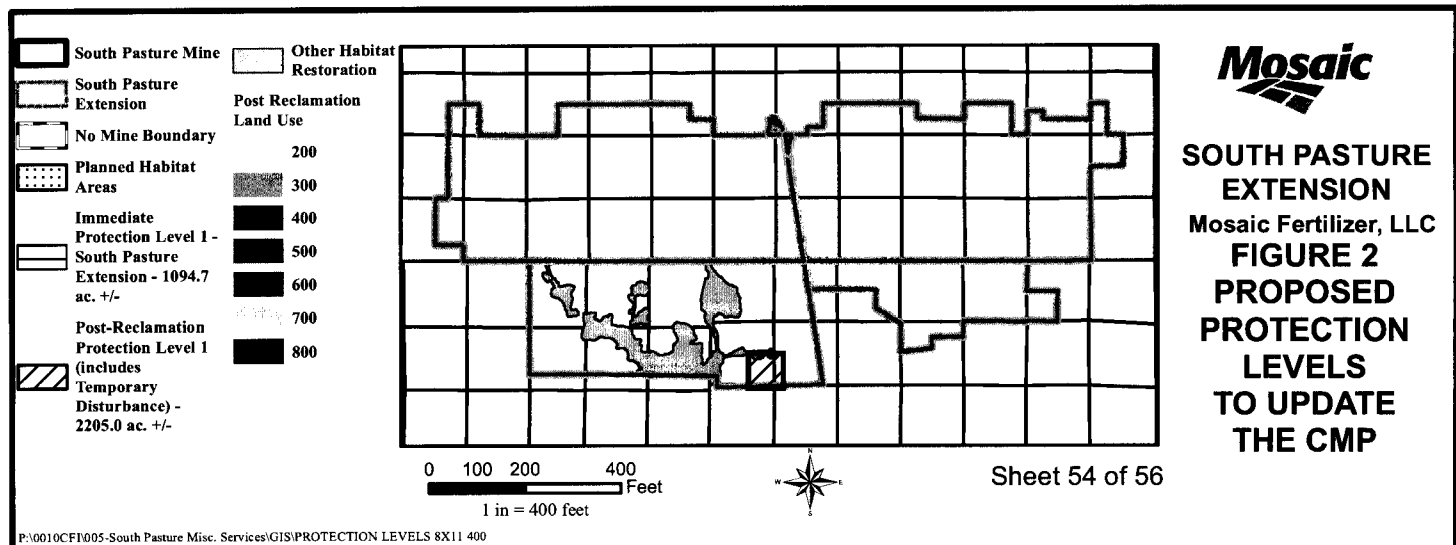
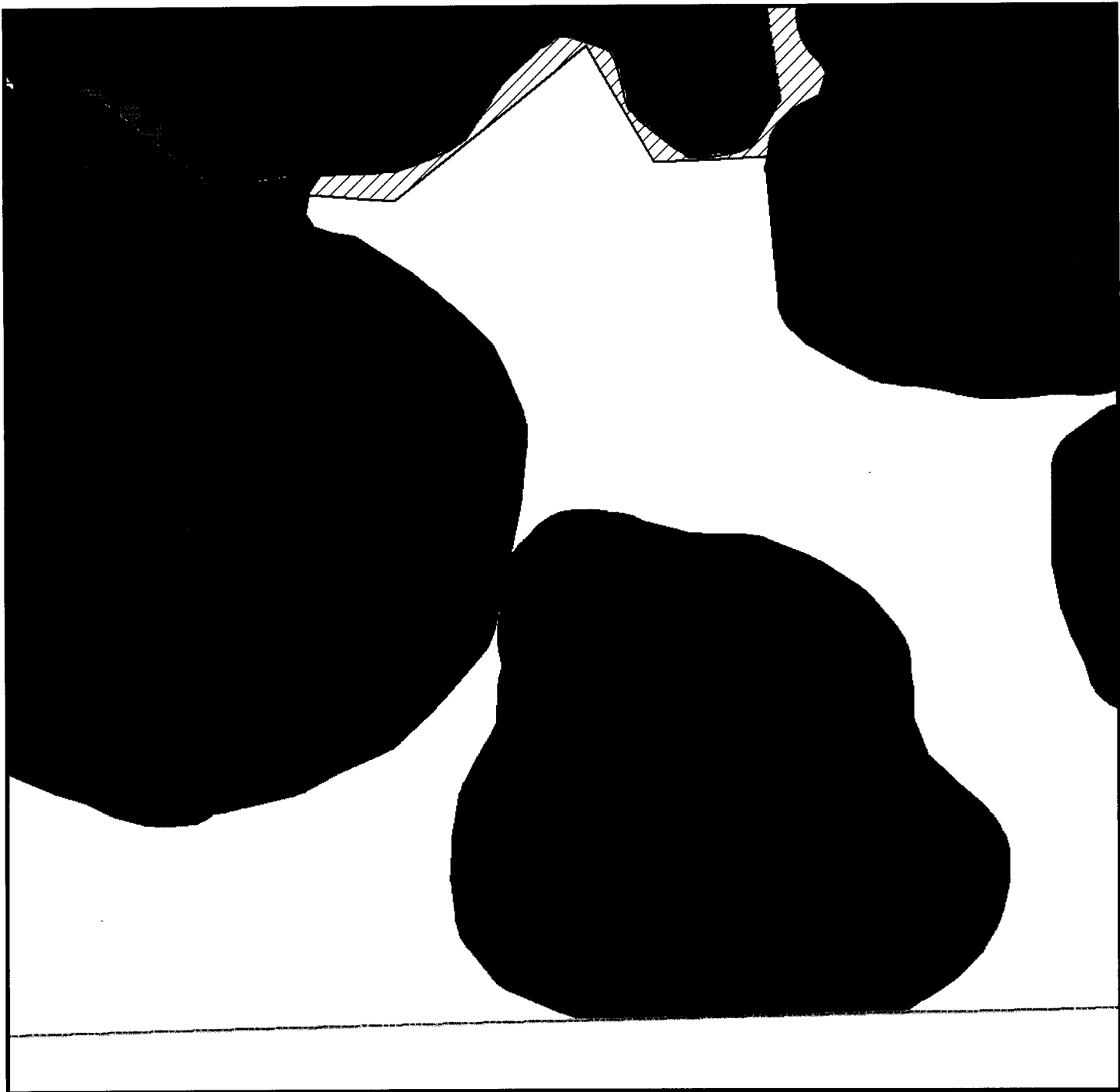
SOUTH PASTURE EXTENSION
Mosaic Fertilizer, LLC
FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

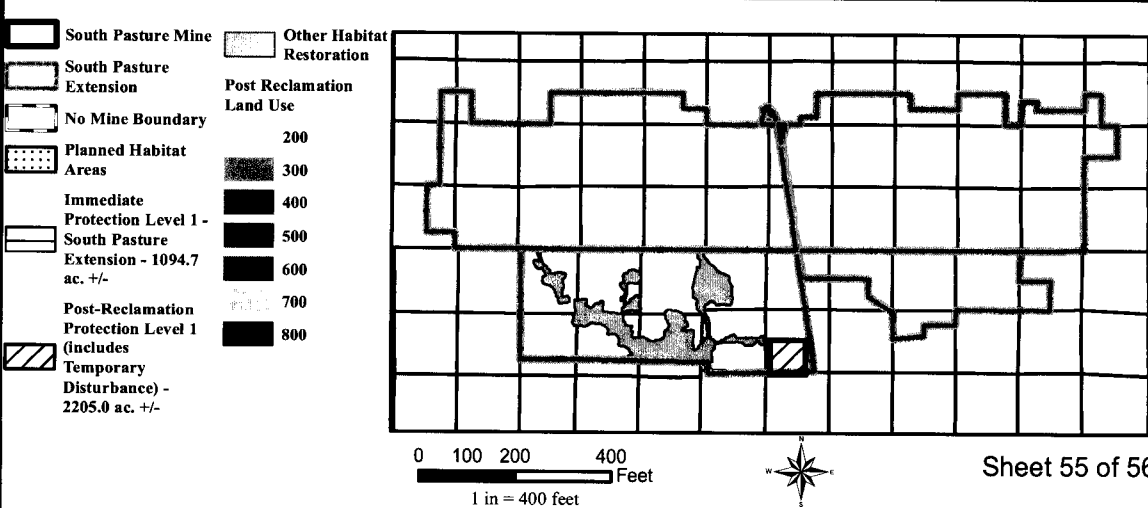
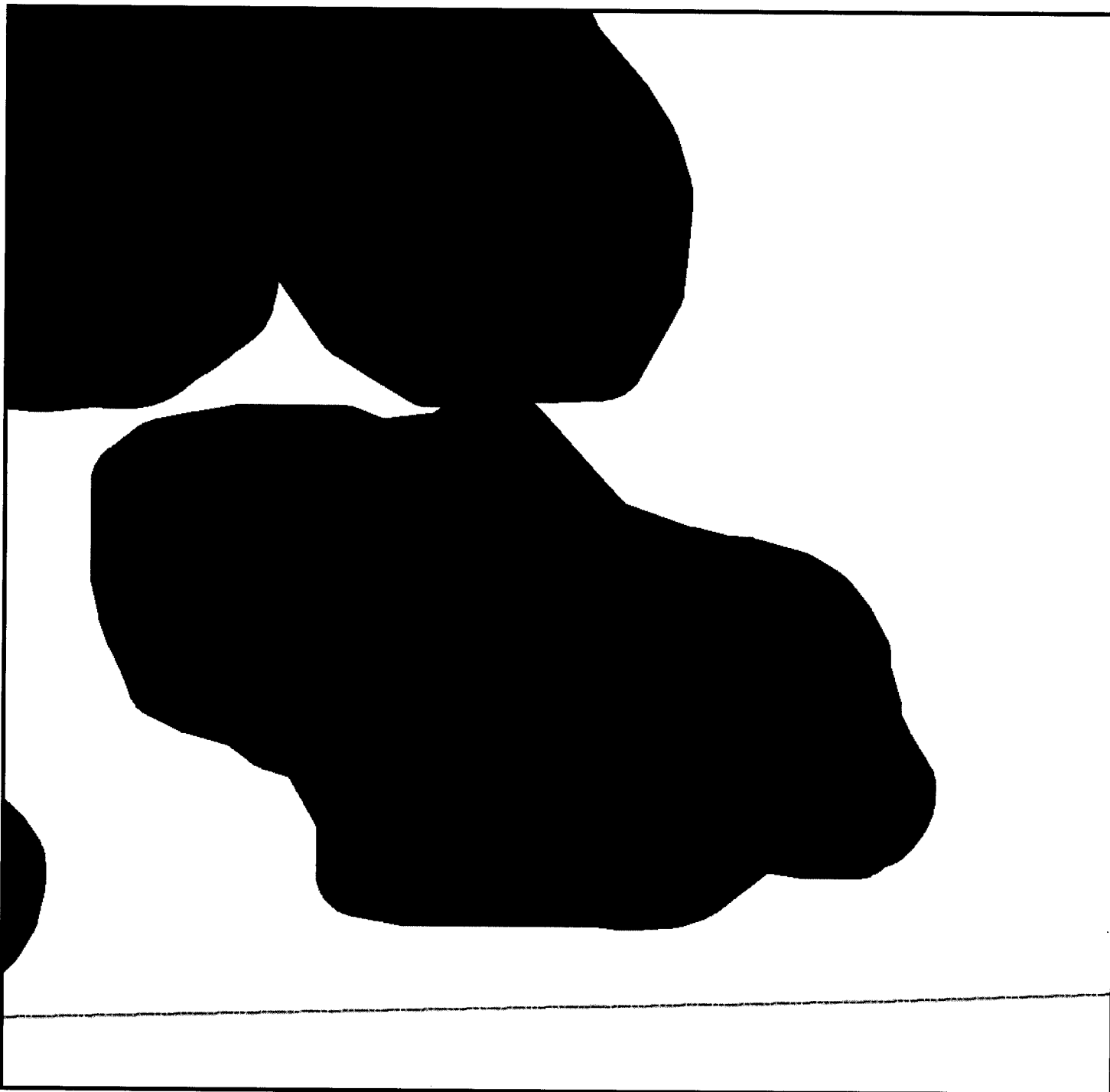






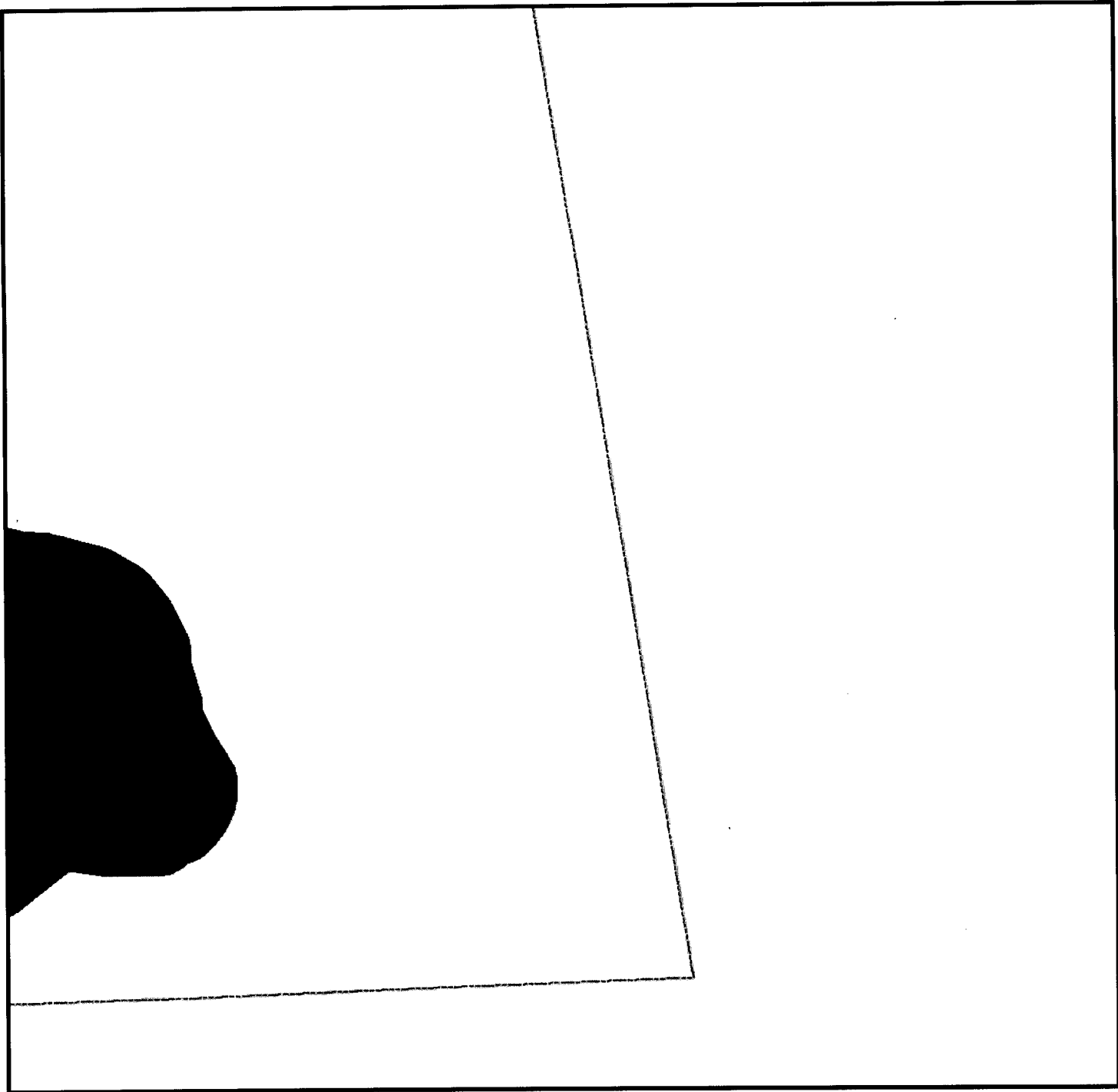











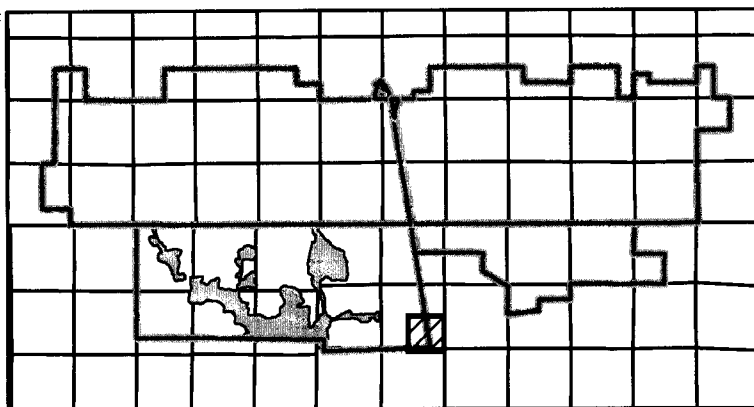


Mosaic

**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**



- | | | | |
|---|---|---|---------------------------|
|  | South Pasture Mine |  | Other Habitat Restoration |
|  | South Pasture Extension |  | Post Reclamation Land Use |
|  | No Mine Boundary | | 200 |
|  | Planned Habitat Areas | | 300 |
| | Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/- | | 400 |
|  | Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/- | | 500 |
| | | | 600 |
| | | | 700 |
| | | | 800 |



**SOUTH PASTURE
EXTENSION**
Mosaic Fertilizer, LLC
**FIGURE 2
PROPOSED
PROTECTION
LEVELS
TO UPDATE
THE CMP**

Sheet 56 of 56

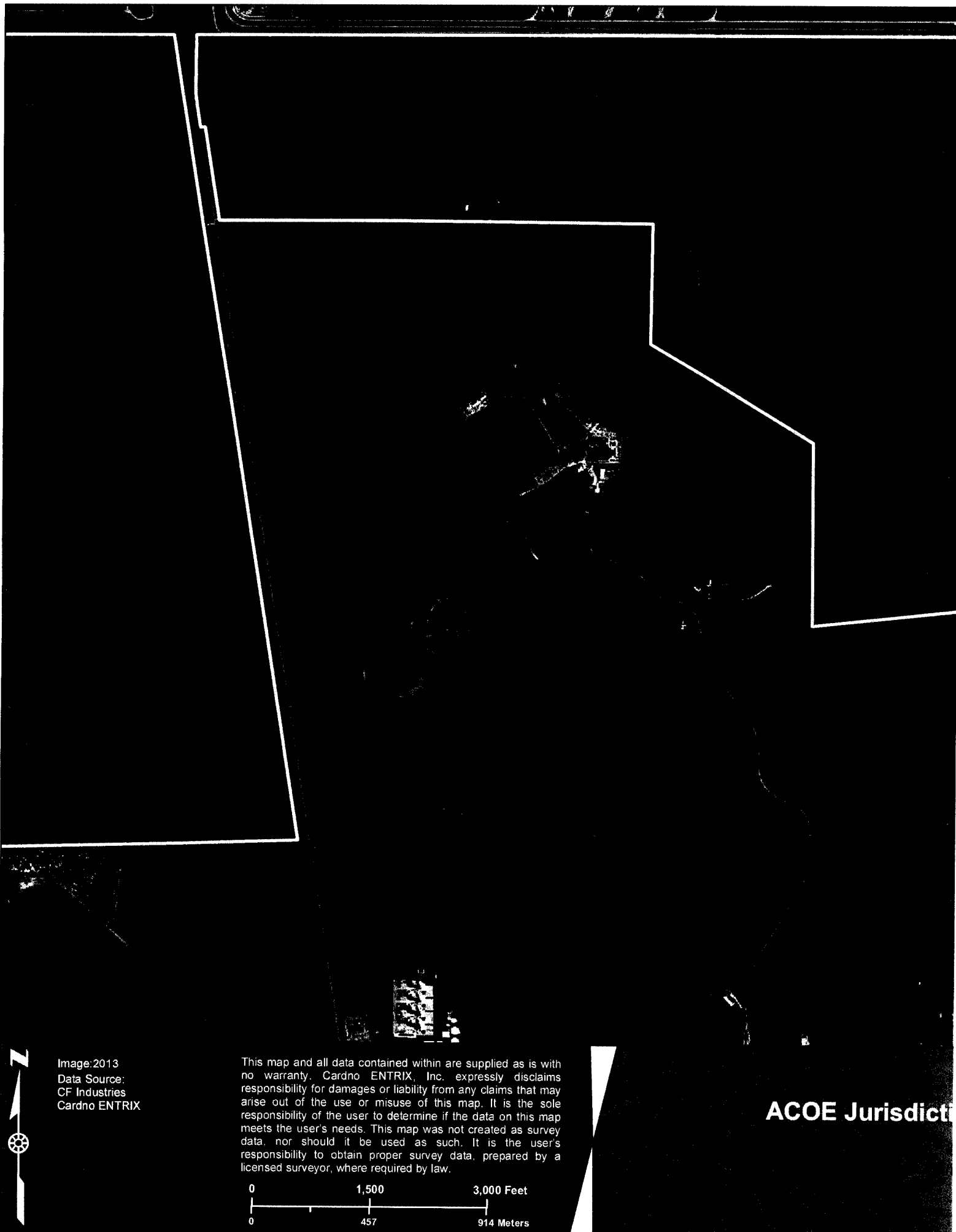


Image: 2013
Data Source:
CF Industries
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ACOE Jurisdiction

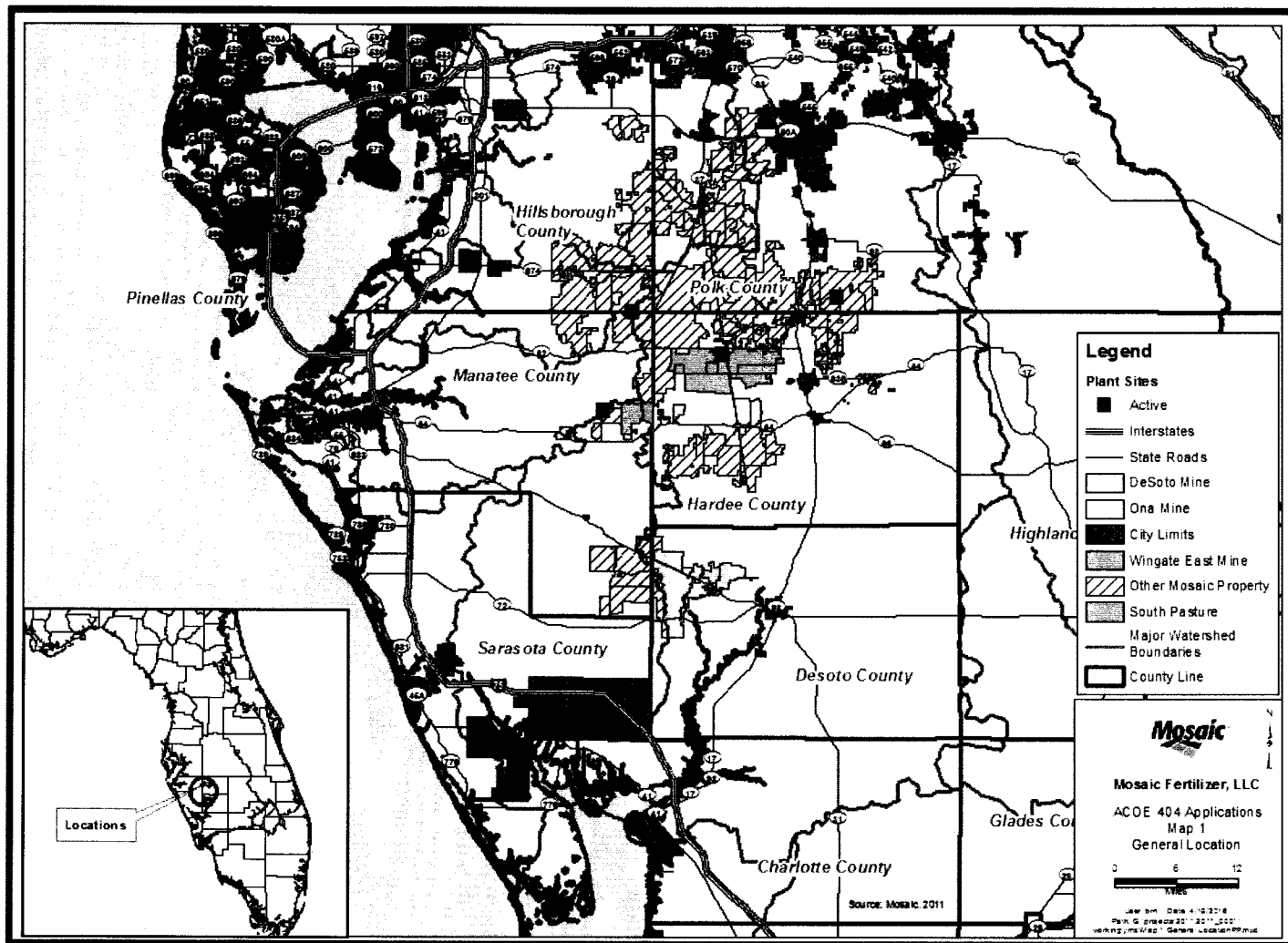


South Pasture Extension Mitigation Plan Update

EPA
July 26, 2016



South Pasture Extension Mine Update Federal CWA 404 Permit Application



South Pasture Extension Mine Update

Federal CWA 404 Permit

- Resubmitted in April 2011
- PN issued June 2012
- JD issued October 2012
- Supplemental application information based on AEIS framework submitted September 2013
- Supplemental PN June 16, 2016
- Last RAI response July 1, 2016

Florida ERP Permit

- Final Permit issued June 2012

Hardee County

- CFRPC Unanimous approval on May 2012
- BOCC Final Approval granted on September 2012



Federal Agency Review Status

- EPA:
 - EPA issued avoidance and minimization concurrence letter- July 15, 2013

“The CFI's Option 4 configuration [Applicant's Preferred Alternative] satisfies our concerns regarding CWA Guidelines for avoidance and minimization mitigation for waters of the U.S. on the proposed SPE mine...”
- USFWS:
 - Final BO issued June 2014



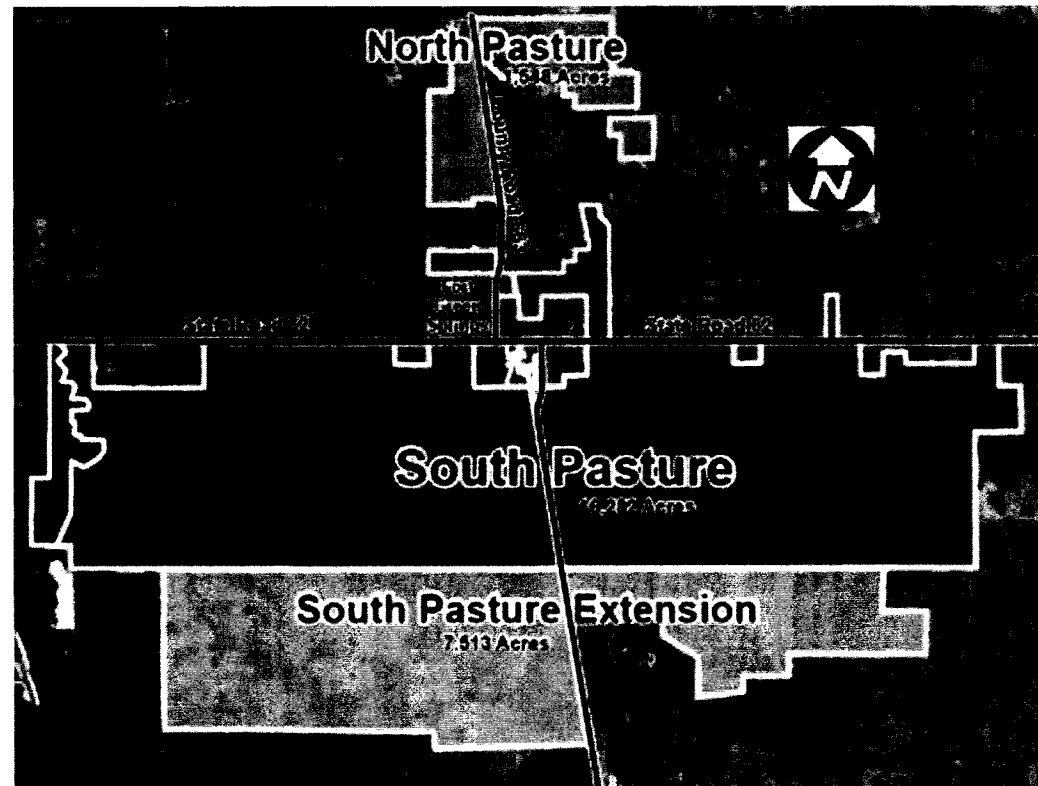
South Pasture Mine Complex

North Pasture 1,548 acres
(Complete)

South Pasture 15,705 acres
(Active)

South Pasture Extension
7,513 acres (Future)

- Avoidance Area = 1,095
Acres (15% Preservation)



FDEP SPE ERP Status

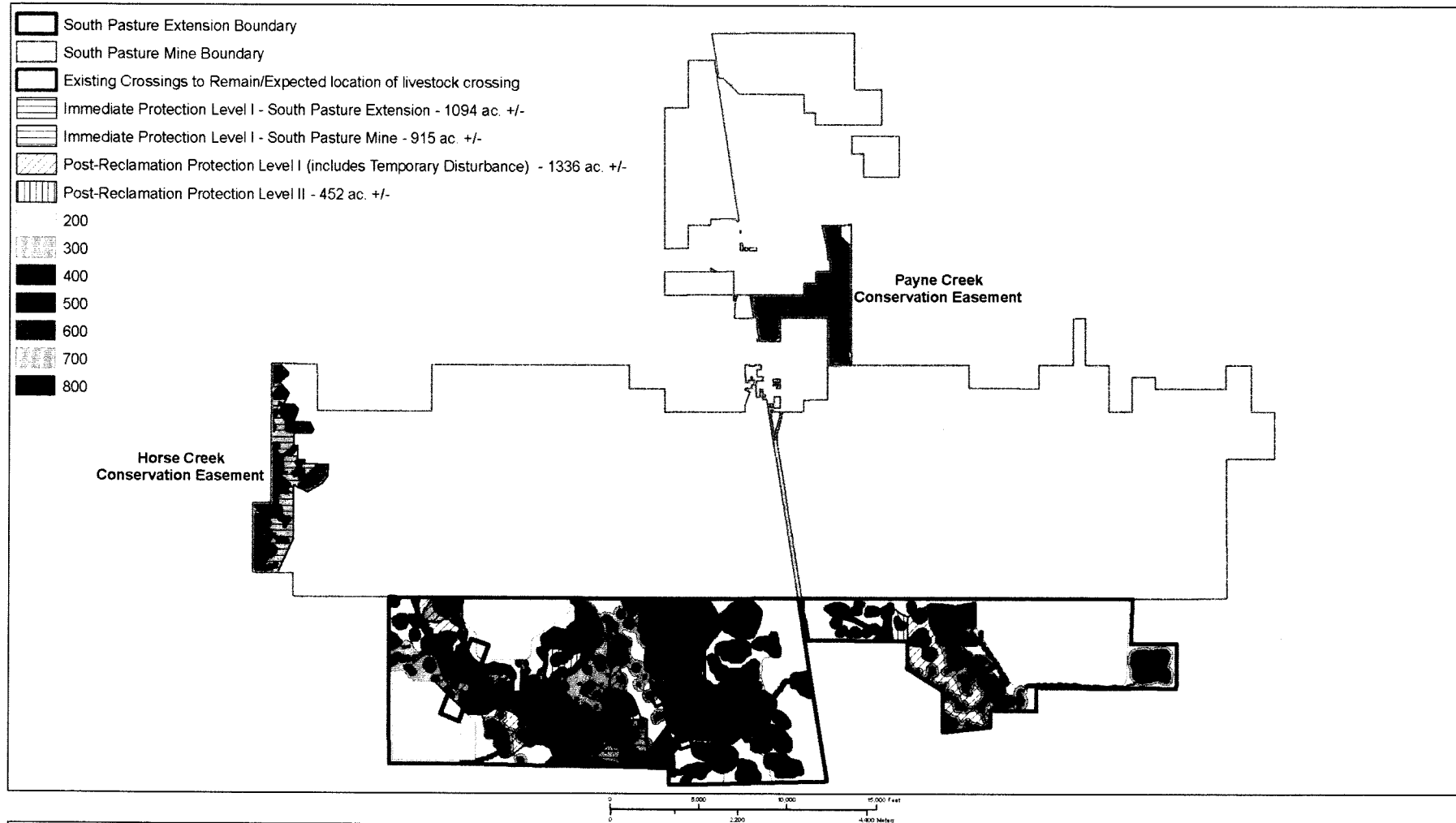


Figure WHMP-9
Proposed Protection Levels
 CF Industries - South Pasture Extension
 Hardee County, Florida



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www.cardno.com	

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Reclamation Plan



SPE Plan Integrated with SP Plan

- Balance native habitat, agriculture, and future development
- Connect native habitat to offsite corridors
- Concentrate future industrial development along CR 663 (consistent with Hardee County comp plan)
- Integrated mine, backfill, and reclamation plans
- At a minimum acre-for-acre, type-for-type replacement

Table 3

**South Pasture Extension Existing
and Post-Reclamation Land Use Summary**

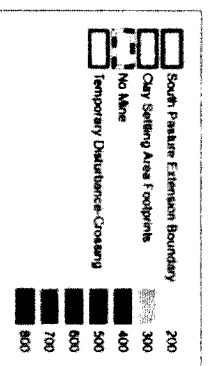
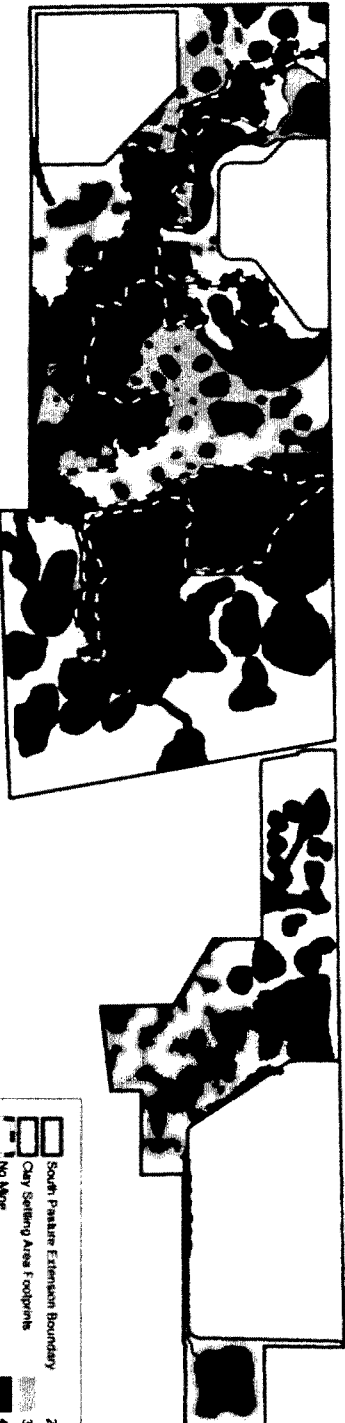
Land Use Type	Existing Acres	Post-Reclamation Acres
Non-Native Uplands (200-level, 700-level, 800-level land uses)	3548.9	3239.3
Native Uplands (300-level, 400-level land uses)	1978.9	2180.7
Open Waters/Wetlands* (500-level, 600-level land uses)	1985.0	2092.8
TOTAL		7512.8

Existing and Post Reclamation Land Use

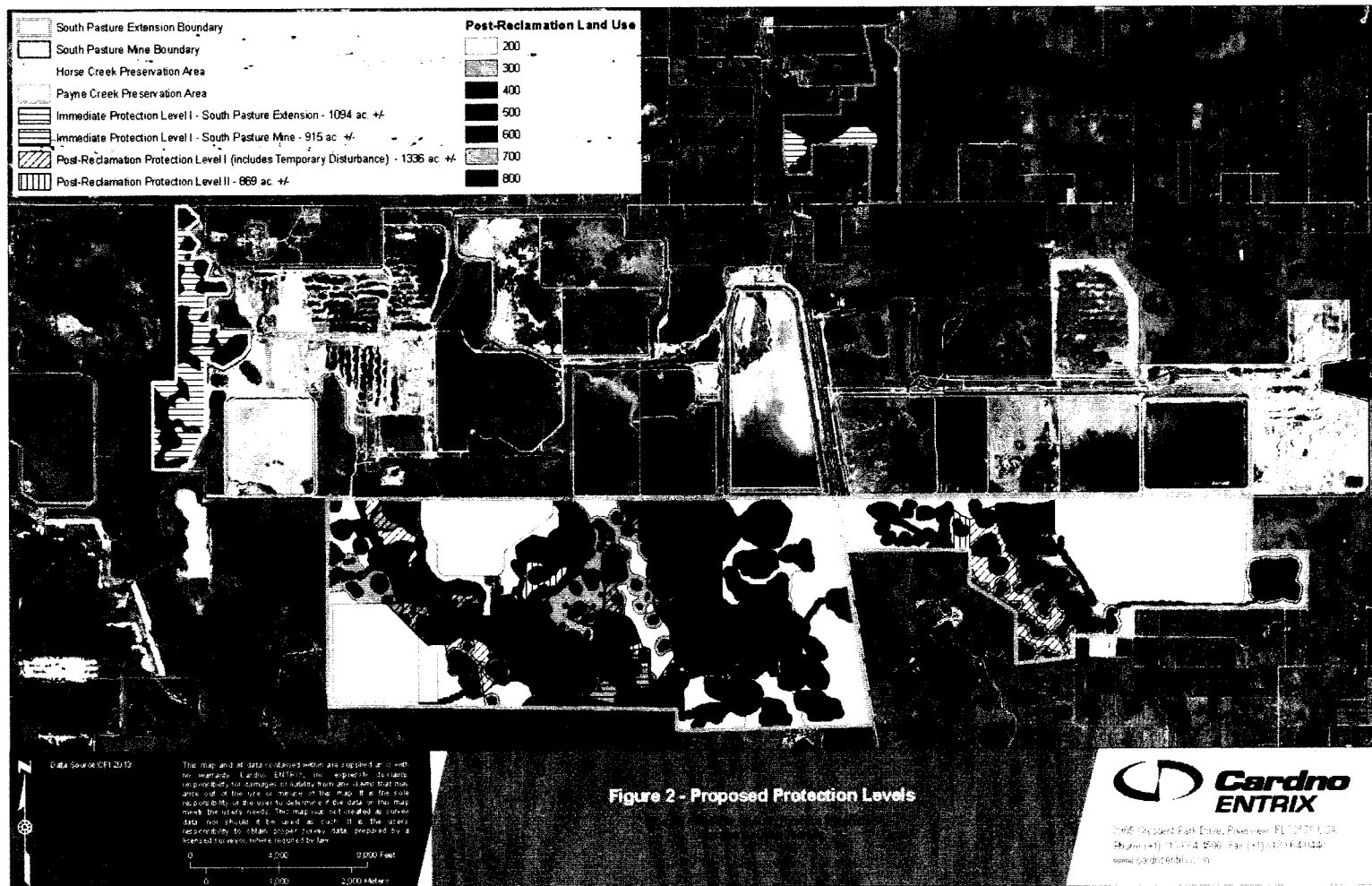
Existing Land Use



Proposed Post Reclamation Land Use



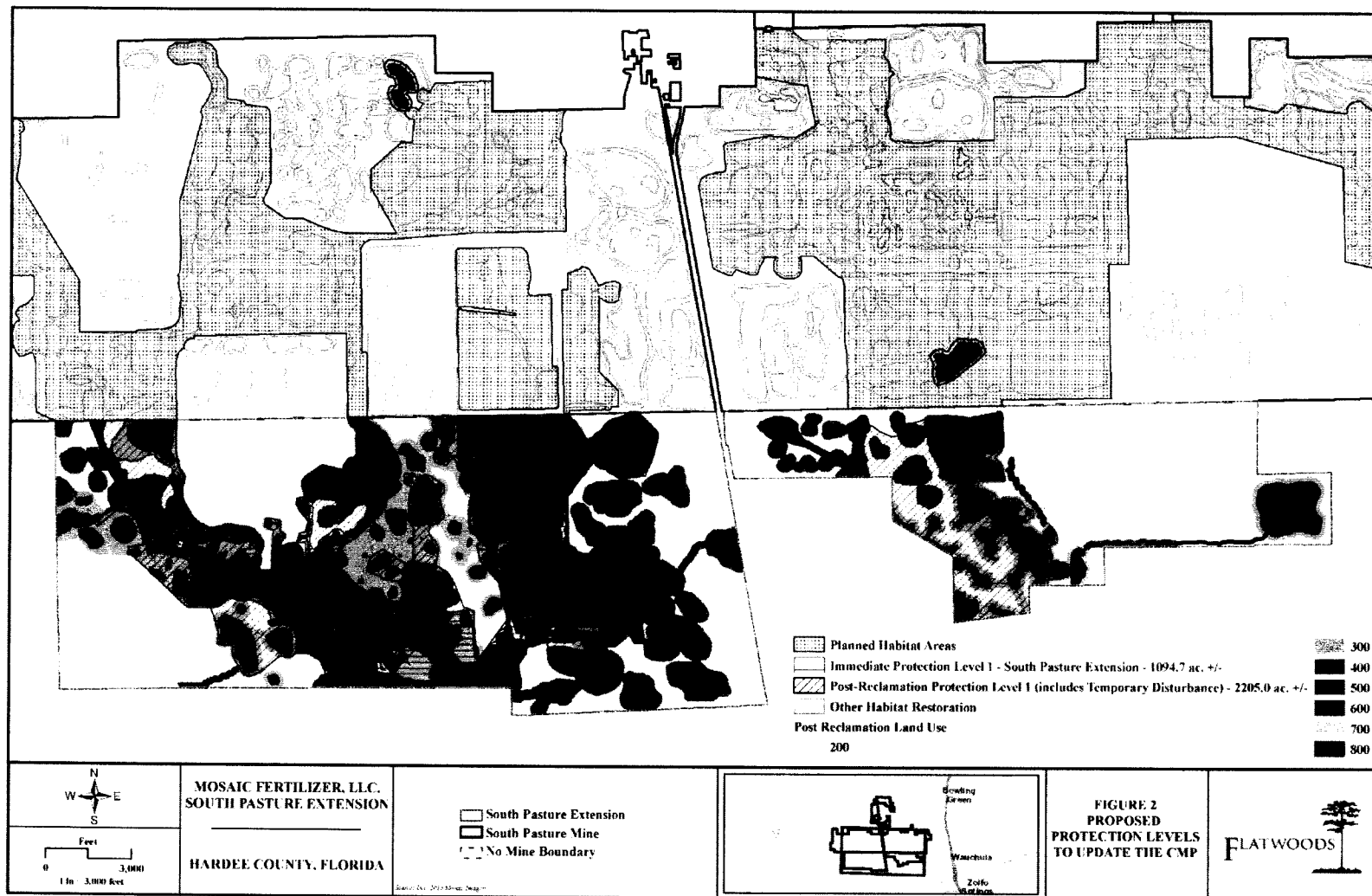
South Pasture Extension- July 2014



- SPE Project Area 7,513 acres
- Avoidance of 1,095 Acres (15% Preservation)
- Additional Preservation of Payne Creek and Horse Creek 916 acres
- 4,216 Acres total Conservation Easement Area



Current Mitigation Plan- July 2016



SPE Project Area 7,513 acres

Avoidance of 1,095 Acres (15% Preservation)

3,300 Acres total Conservation Easement Area



SPE USACE Mitigation Plan Evolution

	July 2014	July 2016	Reason for Change
Project Area	7513	7513	No Change
Impact Acres	1201.9	1198.2	Separate Wetland and Stream Assessment
Establishment Acres	1277.9	1304.3	Time Lag, Risk, and UMAM Scoring Changes
Onsite Preservation & Enhancement Acres	519.5	519.5	No Acreage Change Onsite
Establishment and Onsite Preservation CE Total	3300	3300	Establishment Wetlands and Buffers

Compensatory Mitigation Plan Overview



- Mosaic's Current Compensatory Mitigation Plan provides
 - Includes all elements of 332.4(c)
 - Creating Key Landscape Systems consistent with AEIS Framework
 - Detailed Determination of Credits
 - Adaptive Management Plan
 - Perpetual protection in the form of a Conservation Easement
 - CE Prohibits incompatible land uses
 - Recorded against title
 - Corps has enforcement authority
 - Long Term Management Plan
 - Financial Assurances





Questions?

Mosaic[®]

September 13, 2016

1:30 PM

South Pasture Extension (SAJ-1993-01395)
Mosaic Fertilizer, LLC
Hardee County, Florida

Issue: Mosaic Fertilizer (Mosaic) is seeking Clean Water Act (CWA) Section 404 authorization from the Jacksonville District of the U.S. Army Corps of Engineers (Corps) to extract phosphate ore from the mineral reserves located in the Central Florida Phosphate District (CFPD) and to construct associated infrastructure required to extract and process the phosphate ore at the North Pasture beneficiation facility. The applicant is requesting a 20-year permit to mine phosphate ore located on 7,513 acres (ac) of property in Hardee County, Florida. In total, approximately 1,262 ac of impacts to Corps jurisdictional wetlands and surface waters of the U.S. are proposed. Of these proposed 1,262 ac of impacts, 1,226 ac are wetlands comprised of forested wetlands (448 ac) and herbaceous wetlands (778 ac). The remaining 36 ac of impacts are to Corps jurisdictional open water to include 33,341 linear feet (lf) or 6.3 miles of intermittent ditched and unditched streams. Proposed for avoidance was approximately 523 acres of Corps jurisdictional wetlands that includes 55,501 lf (10.5 miles) of intermittent streams.

Compensatory mitigation for unavoidable impacts to Corps jurisdictional waters included on-site and off-site activities that includes preservation/avoidance, restoration, and creation of open water, intermittent streams and adjacent forested and herbaceous wetlands. Proposed on-site mitigation consisted of 400 ac of wetland preservation, 123 ac of wetland restoration, 1,569 ac of wetland creation, 4,204 lf of reclaimed intermittent streams, and 43,838 lf of created intermittent streams. Proposed off-site mitigation was the preservation of 434 ac of wetlands and 481 ac of uplands.

Background: The South Pasture Extension (SPE) is one of four extremely large phosphate permit applications considered in the CFPD Areawide Environmental Impact Statement (AEIS). The other three phosphate permit applications were Ona Mine (22,320 ac), DeSoto Mine (18,287 ac), and Wingate East Mine (3,635 ac). All four phosphate permit applications were public noticed on June 1, 2012, along with the Draft AEIS. In 2012, the SPE permit applicant was CF Industries (CFI). Mosaic acquired CFI's phosphate business in March 2014. Mosaic acquired CFI's 25,000 ac of phosphate mines, a beneficiation plant, a phosphate manufacturing facility, and ammonia terminal and finished product warehouse facilities.

For all four of the phosphate permits EPA Region 4 invoked the 404(q) Memorandum of Agreement (MOA) by issuing Part IV Paragraph 3(a) and 3(b) letters dated July 30, 2012, and August 23, 2012, respectively. EPA Region 4 cited three major concerns in 2012. These concerns were avoidance and minimization of impacts to aquatic resources, compensatory mitigation, and permit duration.

Between August 2012 and June 2013, the EPA Region 4 reviewed the SPE aquatic resource avoidance plan, met with the CFI representatives on-site and off-site, and discussed how they arrived at their final avoidance configuration. By letter dated July 13, 2013, the EPA Region 4 found that CFI's Option 4 configuration satisfied our concerns regarding the CWA Section 404(b)(1) Guidelines (Guidelines) for avoidance and minimization for waters of the U.S. on the proposed SPE.

The Jacksonville District issued a second public notice on June 16, 2016. In this public notice, they provided a Supplemental Environmental Assessment (EA), Draft CWA Section 404 Guidelines Analysis, and a Draft Public Interest Review for Department of the Army Permit Application SAJ-1993-01395. The EPA Region 4 requested and was granted a 30-day extension to provide comments to this second public notice. Mosaic met with EPA Region 4 on July 26, 2016, at the Regional Office to discuss

September 13, 2016

1:30 PM

Mosaic's revised compensatory mitigation plan (CMP). At this meeting, Mosaic provided EPA with an electronic copy of the latest Draft CMP.

By letter dated August 14, 2016, EPA Region 4 expressed our understanding that the next step would be a response from the Corps pursuant to Part IV Paragraph 3(c) of the 404(q) MOA notifying the EPA how the Corps addressed the issues raised in our letters respectively dated July 30, 2012, and August 23, 2012. Then the EPA provided additional comments with the availability of more recent information provided in the second public notice and the Draft CMP. Based on our review of the recent information, we were generally pleased with the contents of the Draft CMP except that it did not include specific success criteria and that the Adaptive Management Plans, referred to in both the Draft CMP and Supplemental EA, should reference back to the success criteria. Finally, EPA's concern about the duration of the permit remains an outstanding issue.

Very recently, the Corps staff have shared draft special permit conditions with EPA Region 4 staff that included CMP success criteria and adaptive management plan language that would satisfy our concerns regarding CWA 404 Guidelines for SPE compensatory mitigation. SPE permit duration remains an outstanding issue.

Potential Public Relations Issues: The EPA has maintained good, open communications with the Jacksonville District Corps, Mosaic, and nongovernmental organizations (NGOs). Mosaic has a history of meeting with the Administrator to check-in with newly hired top company officials. At these meetings, Mosaic officials rarely mention the permitting activities and, when they do, the company officials are complementary of EPA Region 4. Sierra Club, ManaSota88, and other local NGOs were very vocal during the initial stages of the National Environmental Policy Act scoping and public meetings in 2011 and 2012, and following the June 1, 2012, public notices for the CWA Section 404 permit applications and the Draft AEIS. EPA Region 4 WPD staff have had no recent communications with the NGOs.

Next Steps: The Jacksonville District Engineer (DE) will be sending their Paragraph 3(c) Notice of Intent to Proceed (NIP) to the Regional Administrator (RA). The NIP will include (1) a determination that the DE's decision is contrary to EPA's positions, resolves EPA's issues, or that the project was modified or conditioned to eliminate impacts to aquatic resources along with (2) a copy of the draft permit with modifications or conditions, and (3) a Statement of Findings for the Supplemental EA.

Within 15 days from receipt of the DE's NIP, the RA will need to notify the DE that they will (1) not request higher level review (Paragraph 3(d)(1) letter) or (2) that they have forwarded the issue to Assistant Administrator for the Office of Water with a recommendation to request review by the Assistant Secretary of the Army for Civil Works (Paragraph 3(d)(2) letter).

Action Needed in the Next 100 Days: Potentially, the DE could be sending their Paragraph 3(c) NIP to the EPA Region 4 RA within 100 days. Then the RA will need to sign a Paragraph 3(d) letter to the DE indicating whether or not they will be requesting higher level review.

POC: Duncan Powell, WPD OWSPB
x29258

Ona Phosphate Mine (SAJ-2011-01869-SP)

STATUS

- **Applicant:** Mosaic
- **Location:** Hardee
- **Congressional District:** 17 (Tom Rooney)
- **PM:** John Fellows
- **PN comment letter response received:**
25 September 2013
- **Proposed Work:** Phosphate Mine

ISSUES

- Need approvable compensatory mitigation plan (2008 CMR)
- Additional follow up w/EPA (water quality & quantity, mitigation)
- Section 7 ESA coordination
- NMFS-HCD coordination

IMPACTS

- 3443 acres of impact to wetlands
- 103,978 l.f. streams
- May affect for EIS, wood stork, and caracara, MANLAA for FL grasshopper sparrow, panther, and scrub jay

WAY AHEAD

- Finalize review of RAI response – March 2014
- Continued coordination with applicants, USEPA, USFWS, NMFS, THPO
- PN for results of 404(b)(1) and public interest reviews (to satisfy commitment made in Final AEIS)

STATUS Phosphate AEIS (2010-03680)

- **Applicant:** Mosaic and CF Industries
- **Location:** Hardee, Hillsborough, Manatee, Polk, Sarasota, and DeSoto Counties
- **Congressional District:** District 10 (Daniel Webster), District 14 (Kathy Castor), District 15 (Dennis Ross), District 16 (Vern Buchanan), District 17 (Tom Rooney)
- **PM:** John Fellows
- **NOA for Final AEIS:** 03 May 2013
- **NOA for Addendum:** 12 July 2013
- **Proposed Work:** Four phosphate mines or major mine extensions (Mosaic: Ona, DeSoto, and Wingate; CF Industries: South Pasture Extension)

IMPACTS

- Numbers provided reflect currently-proposed actions
- **DeSoto:** 2760 acres of wetlands, 31,729 linear feet of streams
- **Ona:** 3442 acres of wetlands, 103,978 linear feet of streams
- **Wingate East:** 761 acres of wetlands, 27,287 linear feet of streams
- **South Pasture Extension:** 1226 acres of wetlands, 33,341 linear feet of streams

ISSUES

- 2551 submissions on Draft AEIS; 4110 comments
- **EPA (cooperating agency):** concerns about mitigation sequencing, permit duration, surface and groundwater quantity and quality, tribal coordination, economic analysis
- **NGOs:** concerns about NEPA compliance, water quality and quantity, wetlands, radiation, historic properties, cumulative impacts, and more

WAY AHEAD

- 404(b)(1) and public interest individual project reviews by individual PMs; AEIS PM working with team/PMs to bridge between AEIS and projects for NEPA
- Continued coordination with USEPA (mitigation, permit duration, water quality and quantity), USFWS, NMFS, THPO to resolve project-specific issues
- Separate public notices for results of each project's 404(b)(1) and public interest review
- Individual Records of Decision (RODs) for

19-Apr-17 each project

DeSoto Phosphate Mine (SAJ-2011-01968)

STATUS

- **Applicant:** Mosaic
- **Location:** Desoto County
- **Congressional District:** 17 (Thomas Rooney)
- **PM:** Mark Peterson
- **Complete Application Received:** 1-Jun-2012
- **PN Publication:** 5-Jun-12
- **Proposed Work:** 18,287 acre phosphate mine
With beneficiation plant.

ISSUES

- **EPA:** Appears satisfied with “mine/no-mine” plan - Framework Consistency letter received.
- **FWS:** BA submitted Aug 2013.
- **THPO:** Mosaic provided response to STOF request for a new CRAS. STOF has not responded yet.
- **Upfront Mitigation:** Mosaic is close to securing a two mile (624 ac section) of Horse Creek flood plane for upfront mitigation.
- **Reclamation wetlands:** Mosaic Requesting partial UMAM credit for mitigation w/o protection.

IMPACTS

- Total JD Wetlands on site = 4,128 ac
- Wetland acres avoided = 1,368 ac (33%)
- Total JD wetland impacts = 2,760 ac
- Framework wetlands avoided = 1,246 ac (46%)
- Total streams on site = 73,790 LF
- Total streams avoided = 42,060 LF (57%)
- Streams Impacts = 31,729 LF
- T&E formal: Eastern indigo snake, caracara, Wood stork, Florida panther.
- T&E informal: Florida scrub-jay, and the Florida grasshopper sparrow
- THPO historical resources present

WAY AHEAD

- Verify wetlands jurisdiction
- Conclude THPO consultation
- Need detailed mitigation plan from Mosaic
- Prepare revised public notice (to satisfy commitment made in Final AEIS)
- Receive BO from FWS
- Receive State WQC
- Decision on cattle grazing w/in mitigation areas
- Next meeting with Mosaic on 6-Feb-14

19-Apr-17